# EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT.

**A DISSERTATION SUBMITTED TO THE TAMILNADU**
**Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI,**
**IN PARTIAL FULFILLMENT FOR THE DEGREE OF**
**MASTER OF SCIENCE IN NURSING**
**CHILD HEALTH NURSING**

**BY**

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**KUMARAPALAYAM (PO),**
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**OCTOBER – 2018**

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**EXAMINERS:**

1. ……..

2. …….

# DECLARATION

**I, 301617551,** hereby declare that this dissertation entitled "**EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"** has been prepared by me under the guidance and direct supervision of **Dr. Mrs. R. JAMUNARANI, M.Sc., (N), Ph.D., Professor cum Principal, and Mrs. P. BEULAH, M.Sc., (N)., PGDSH, Professor cum HOD, Department of Child Health Nursing,** Sresakthimayeil Institute of Nursing and Research, (J.K.K. Nattraja Educational Institution), KUMARAPALAYAM, Namakkal District as the requirement for partial fulfillment of **MASTER OF SCIENCE IN NURSING** degree under **THE TAMILNADU Dr.M.G.R. MEDICAL UNIVERSITY, CHENNAI – 32.** This dissertation has not been previously formed and this will not be used in further for award of any other degree/ diploma. This dissertation represents independent work on the part of the candidate.

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# ABSTRACT

**Background:** Childhood obesity has both immediate and long-term effects on health and well-being. Immediate health's effects of obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. In a population based sample of 5 to 17 year olds. 70% of obese youth had at least one risk factors for cardiovascular disease. Obese adolescents are more likely to have prediabetes, a condition in which blood glucose levels indicate a high risk for development of diabetes.

Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem. Long term health effects: Children and adolescents who are obese are likely to be obese as adults and are therefore more at risk for adult health problems such as heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthitis. One study showed that children who became obese as early as age 2 were more likely to be obese as adults. Overweight and obesity are associated with increased risk for many types of cancer, including cancer of the breast, colon, endometrial, esophagus, kidney, pancreas, gall bladder, thyroid, ovary, cervix, and prostate as well as multiple myeloma and Hodgkin's lymphoma.

**Statement of the problem:** Effectiveness of food diary on obesity parameters among obese adolescent girls in selected schools, Namakkal District.

**Objectives:** (1) To assess the level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group. (2) To assess the effectiveness of food diary on obesity parameters among obese adolescent girls in experimental and control group. (3) To find out the association between the post test score of obesity parameters among obese adolescent girls and their selected demographical variable in experimental and control group.

**Research design:** The research design used for the present study was quasi experimental design where pre and post test with control group design was selected to assess the effectiveness of food diary on obesity parameters among obese adolescents girls

**Setting:** The present study was conducted in JKK Rangammal Higher Secondary School, Kumarapalyam, Namakkal District for experimental group, and Star Lion Matric Higher Secondary School, Kumarapalayam, Namakkal District for control group.

**Participants:** The total sample size was 50 obese adolescents girls out of which experimental group was 25 and control group was 25.

**Method:** In this study the investigator adopted purposive sampling technique as a selection of samples. In that 25 obese adolescent girls were considered as experimental group and 25 obese adolescent girls were considered as control group. The reason for selecting two setting is to avoid contamination of samples in experimental group and control group.

**Result:**

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, diet pattern and there is significant association between post test scores of control group only when compared to menstrual cycle and family history of obesity.

**Conclusion:**

From the findings of the study it can be concluded that, most of the adolescence girls were in the age group of 15 years, family income were below Rs.5,000 – Rs.10,000 per month in urban family, nuclear family, first child in the family, regular menstrual cycle, non vegetarian, family history of obesity. Food diary was effective in obesity parameters.

It reveals that there is no significant association between post test scores of experimental group when compared to age, type of family birth order, menstrual cycle, diet pattern ($P>0.05$) and there is significant association between post test scores of experimental group only when compared to residential area, family history of obesity. It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, diet pattern and there is significant association between post test scores of control group only when compared to menstrual cycle and family history of obesity.

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# CHAPTER – I

## INTRODUCTION

***The raise of childhood obesity has placed a health of an***

***Entire generation at risk"***

**- Tom Vilsack**

The study-titled global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013. A systematic analysis for the Global Burden of Disease Study 213-used data collected by international bodies and organizations in various countries like India over three decades. The US topped the list with 13 percent of the obese people worldwide in 2013, while China and India together accounted for 15 per cent of the world's obese population, with 46 million and 30 million obese people, respectively. According to the study, number of overweight and obese people globally increased from 857 million in 1980 to 2.1 billion in 2013. This is one-third of the world's population. **(India Today, 2016).**

India has the largest population of adolescents in the world being home to 243 million individuals aged 10-19 years. The State of the World's Children report at the Raj Bhavan in Guwahati, Patnaik said, country's adolescents constituted 20 per cent of the World's 1.2 billion adolescents. Despite rapid urbanization and the trend of migration to cities, more than half of the adolescents (10-19 years) and youth (15-24 years) in Tamil Nadu line in rural areas, show Census 2011 figures. There are around 1.24 crore boys and girls in the 10-19 age group and nearly 1.26 crore youths in the state. The data on adolescents and youth released on Friday

also revealed that literacy level among adolescents and youth in Tamil Nadu is higher than the state's literacy level of 80.09%.While 97.70% of adolescents are literate and the rate is 96.08% among youths. **(B.Shivakumar, Times of India, 2016).**

Investing in the worlds 1.2 billion adolescents aged 10-19 now can break entrenched cycles of poverty and inequity said UNICEF in its 2011. India is home to more than 243 million adolescents, who account for a quarter of the country's population. In 2009, there were an estimated 1.2 billion adolescents in the world forming around 18 percent of the global population. The vast majority of the world's adolescents 88 percent live in developing countries. The least developed countries are home to roughly 16 percent of all adolescents. **(UNICEF, 2015).**

Total Population of Tamil Nadu is 7.21 crores as per census 2011, 10 to 16 Years constitutes 21.4 percent of total population. **(WHO, 2015)**

Childhood obesity has more than doubled in children and quadrupled in adolescents in the past 30 years. The percentage of children aged 6-11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2012. Similarly the percentage of adolescents aged 12-19 years who were obese increased from 5% to nearly 21% over the same period **(Centers for disease control and prevention, 2015).**

Obesity is the most prevalent nutritional disorder among children and adolescents in the United States. A few extra pounds do not suggest obesity. However they may indicate a tendency to gain weight easily and a need for changes in diet and exercise. Generally, a child is not considered obese until the

weight is at least 10 percent higher than what is recommended for their height and body type. Obesity most commonly begins between the ages of 5 and 6, or during adolescence. Studies have shown that a child who is obese between the ages of 10 and 13 has an 80 percent chance of becoming a obese adult. (**American academy of child and adolescent psychiatry, 2014).**

Childhood obesity affects both developed and developing countries of all socio-economic groups, irrespective of age, sex or ethnicity. It has been estimated that worldwide over 22 million children under the age of 5 are obese, and one in 10 children is overweight. A wide range of prevalence levels exists, with the prevalence of overweight in Africa and Asia averaging well below 10 per cent and in the Americas and Europe above 20 percent. The proportion of school-age children affected will almost double by 2010 compared with the most recently available surveys from the late 1990s up to 2003. Obesity has become a serious public health concern affecting a significant portion of the population in countries like the US. Overall among adults aged at least 20 yr in 1999-2002, 65.1 per cent were overweight and 30.4 per cent were obese. Among children aged 6 through 19 yr in 1999-2002 31.0 percent were overweight and 16.0 per cent were obese. Asian countries are not immune to this phenomenon. For example, in China the prevalence of overweight and obesity among children aged 7-9 yr increased from 1-2 per cent in 1985 to 17 per cent among girls and 25 per cent among boys in 2000. In addition, obesity prevalence varies across socio-economic state. In developed countries, children of low socio-economic status are more affected than their affluent counterparts. The opposite is observed in developing countries: children of the upper socio-economic strata are more likely than poor children to be

obese. India data regarding current trends in childhood obesity are emerging. A recent study conducted among 24,000 school children in south India showed that the proportion of overweight children increased from 4.94 per cent of the total students in 2003 to 6.57 per cent in 2005 demonstrating the time trend of this rapidly growing epidemic. Socio -economic trends in childhood obesity in India are also emerging. A study from northern India reported a childhood obesity prevalence of 5.59 per cent in the higher socio-economic strata when compared to 0.42 per cent in the lower socio-economic strata. **(Manuraj, Krishnakumar, 2014).**

In Tamilnadu, Coimbatore showed a higher prevalence of obesity (23 percent) while compared with other districts (Madurai(17 percent), Salem (22 percent), Tiruchirappalli (20 percent), and Tirunelveli (18 percent)}. The prevalence of obesity was 29 percent in boys and 32 percent in girls. The prevalence of underweight was 34 percent in boys and 26 percent in girls. Girls had a higher prevalence rate of overweight and obesity while compared with boys of the same age. **(A. Ponni Syamala, 2014)**

A recent study conducted among 24,000 school children in south India showed that the proportion of overweight children increased from 4.94 per cent of the total students in 2003 to 6.57 per cent in 2005 demonstrating the time trend of this rapidly growing epidemic. **(Mohan Reddy N, Kalyana Kumar, 2014)**

Childhood obesity predisposes to insulin resistance and type 2 diabetes, hypertension, hyperlipidemia, liver and renal disease, and reproductive dysfunction. This condition also increases the risk of adult-onset obesity and

cardiovascular disease. Obesity in children is a complex disorder. Its prevalence has increased so significantly in recent years that many consider it a major health concern of the developed world. The National Health and Nutrition Examination survey (NHANES) indicate that the prevalence of obesity is increasing in all pediatric age group, in both sexes, and in various ethnic and, racial groups. Many factors, including genetics, environment, metabolism, lifestyle, and eating habits, are believed to play a role in the development of obesity. However, more than 90% of cases are idiopathic; less than 10% are associated with hormonal or genetic causes**. (Steven M Schwarz, 2013)**

Possessing little self-regard can lead people to become depressed, to fall short of their potential, or to tolerate abusive situation and relationships. Too much self-love, on the other hand, results in an off-putting sense of entilement and an inability to learn from failures. (It can also be a sign of clinical narcissim Perhaps no others self-help topic has spawned so much advice and so many (often conflicting) theories. Here are our best insights on how to strike a balance between accurate self-knowledge and respect for who you are. **(Psychology today, 2013)**

WHO identifies adolescent as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19. It represents one of the critical transitions in the life span and is characterizes by a tremendous pace in growth and change that is second only to that of infancy. Biological processes drive many aspect of this growth and development, The biological determines of adolescence are fairly universal. Duration and defining characteristics of this period may vary across time, cultures, and socioeconomic situations. This period has seen many changes over the past century namely early

onset of puberty, later age of marriage, urbanization, global communication, and changing sexual attitudes and behaviours. (**WHO, 2013)**

Food diaries can unveil patterns of overeating. They can also reveal identify triggers to avoid, such as not eating enough throughout the day and then overeating at night, or overeating when drinking alcohol **(Sherrie Delinsky, PhD, 2013).**

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in Kilograms divided by the square of his height in meters (kg/m2). (**WHO, 2013)**

Approximately 21-24% of American children and adolescents are overweight, and another16-18% is obese; the prevalence of obesity is higher among specific ethnic groups. (**Steven M Schwarz, 2013).**

Adolescence is the period between the onset of puberty and the cessation of physical growth; roughly from 13-18 years of age. **(Donn L, 2013)**

Obesity in adolescence is referred as having excess body weight for a particular height from fat, muscle, bone, water, or a combination of these factors. **(Dr. Thomas H.Inge, 2013).**

The incidence of obesity among American teenagers is 12-15%.Obesity is more common in girls. One study reported a high prevalence of obesity in 14 year old girls(32.4%) compared to 14 year old boys(3.4%).Obesity in these cases was

defined by the triceps skin folds being greater than 25mm. The Ten State Nutrition Survey (TSNS) conducted in 1968-70, found that females were fatter than males at all ages. Adolescence was a period of increasing fatness in the females and of a transient decrease of fatness in males. There is also a higher rate of obesity amongest adolescents from a low socio-economic class as opposed to a higher one. **(Lynn Marmitt, 2012).**

Most people's thoughts and feelings about themselves fluctuate somewhat based on their daily experiences. The grade you get on an exam, how your friends treat you, ups and downs in a romantic relationship can all have a temporary impact on how you feel about yourself. **(The Counseling and Mental Health Center(CMHC), 2011**).

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. People are considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight in kilograms by the square of the person's height in meters, exceeds 30 Kg/m2. **(Adair LS, 2011).**

Obesity means having too much body fat. It is different from being overweight which means weighing too much. The weight may come from muscle, bone, fat and/or body water. Both terms mean that a person's weight is greater than what's considered healthy for his or her height. Obesity occurs over time when you eat more calories than you use. The balance between calories-in and calories-out differs for each person. Factors that might affect your weight include your genetic

makeup, overeating, eating high-fat, and not being physically active. Being obese increase your risk of diabetes, heart disease, stroke, arthritis and some cancers. If you are obese, losing even 5 to 10 percent of your weight can delay or prevent some of above diseases. **(National Institute of Diabetes and Digestive and Kidney Diseases, 2011)**.

The self- is what we think about the self; self-esteem is the positive or negative evaluations of the self, as in how we feel about it.' Self-esteem is attractive as a social psychological construct because researchers have conceptualized it as an influential predictor of certain outcomes, such as academic achievement, happiness, satisfaction in marriage and relationships, and criminal behavior. Self -esteem can apply specifically to a particular dimension (for example, "I believe I am a good writer and feel happy about that") or a global extent (for example," I believe I am a bad person, and feel bad about myself in general"). Psychological usually regard self-esteem as an enduring personality characteristic ("trait" self-esteem),though normal, short-term variations ("state" self-esteem) also exist. **Smith and Mackie (2011)**

The problem of childhood obesity in the United States has grown considerably in recent years. Between 16 and 33 percent of children and adolescents are obese. Obesity is among the easiest medical condition to recognize but most difficult to treat. Unhealthy weight gain due to poor diet and lack of exercise is responsible for over 300.000 deaths each year. The annual cost to society for obesity is estimated at nearly $100 billion. Overweight children are much more likely to become overweight adults unless they adopt and maintain healthier patterns of eating and exercise. **(WHO, 2010)**

Childhood obesity has both immediate and long-term effects on health and well-being. Immediate health's effects are obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. In a population -based sample of 5- to 17 year-olds. 70% of obese youth had at least one risk factors for cardiovascular disease. Obese adolescents are more likely to have prediabetes, a condition in which blood glucose levels indicate a high risk for development of diabetes. Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem. Long -term health effects: Children and adolescents who are obese are likely to be obese as adults and are therefore more at risk for adult health problems such as heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthitis. One study a showed that children who became obese as early as age 2 were more likely to be obese as adults. Overweight and obesity are associated with increased risk for many types of cancer, including cancer of the breast, colon, endometrial, esophagus, kidney, pancreas, gall bladder, thyroid, ovary, cervix, and prostate, as well as multiple myeloma and Hodgkin's lymphoma. **(Centers for disease control and prevention, 2010)**.

A Study at the University Of Medicine And Dentistry Of New Jersey found that obese girls ages 13 to14 are four times more likely to experience low self – esteem than non-obese girls.

The study also reported that obese boys and girls with low self-esteem had higher rates of loneliness, sadness and nervousness. These children were more likely to smoke and drink alcohol compared with obese children with normal self-

esteem. Depression, often an outcome of low self-esteem, affects as many as 750,000 teens in the U.S. **(Childhood Obesity and self –Esteem, 2010)**

Food diaries also help people identify areas where they can make changes that will help them lose weight. For example, she says, "people don't realize how many calories they are obtaining from calorie beverages and snacks, and these can be easy interventions…that can help reduce calories. **(Victoria Catenacci, MD, 2010)**

**NEED FOR THE STUDY**

Adolescence begins around age 10, 11, or 12 and concludes somewhere between 18 and 21 years of age. It is important to remember that age alone does not signify the beginning and end of adolescence, but rather achieving key development millstones indicates when a particular stages of development has begun or concluded. **(Chirsclause, 2016).**

Adolescence is a transitional stage of physical and psychological human development that generally occurs during the period from puberty to legal adulthood (age of majority). The period of adolescence is most closely associated with the teenage years, though its physical, psychological and cultural expressions may begin earlier and later. For examples, although puberty has been historically associated with the onset of adolescent development, it now typically begins prior to the teenage years and there have been a normative shift of it occurring in preadolescence, particularly in females (see precocious puberty). Physical growth, as distinct from puberty (particularly in males), and cognitive development generally seen in adolescence, can also extend into the early twenties. Thus

chronological age provides only a rough marker of adolescence, and scholars have found it difficult to agree upon a precise definition of adolescence **(Wikipedia, 2015).**

Adolescence is common understood to define the period of life between childhood and adulthood. This time frame, however, not only describes a very diverse reality, but adolescence varies considerably across cultures, over time, and within individuals. Therefore, the development term or stage marked " adolescence" clearly fails to provide the best frame reference for this diversely experienced developmental period of life. Western culture, for sample, defines adolescence as the time period from puberty to age 18 or21, but non per tern cultures tend to mark the beginning of adulthood with rites of passage often following the onset of puberty. These rites mark the end of an individual's childhood and his or her acceptance into adult society. Likewise, adolescence has not always lasted until age 18 or 21, even within our own culture. For examples, prior to the Industrial Revolution, the family functioned as an inclusive unit; thus the transition from childhood to adulthood was relatively short. As children performed adults tasks, they became adults as early as age 13 **(Sisson, Herson, Van Hasselt, 2015).**

Last, among teens themselves, adolescence is experienced differently by individuals of the same biological age. Experiences and physical maturation are not the same for all teens. The age of onset of puberty, the rate of development, and the expression of such development is individually expressed among different teenagers. **(Kalpana, 2015).**

1.2 billion Adolescents (10-19 years old)today make up 18 percent of the world's population. More than half of all adolescents live in Asia. In absolute numbers, India is home to more adolescents-around243 million- than any other country. It is followed by china, with around 200 million adolescent. The adolescent population of either of these countries dwarfs that of any other country. **(A report card on adolescence, 2015)**.

Our world is home to1.8 billion young people between the ages of 10 and 24, and the youth population is growing fastest in the poorest nations. Within this generation are 600 million adolescent girls with specific needs, challenges and aspirations for the future. **(The power of 1.8 billion, UNFPA, 2015)**.

India has one of the fastest growing youth populations in the world. The vast majority of adolescents,(children in the 10-19 age group) account for 22.8% of the population of India and girls below 19 years of age constitute one-fourth of India's fast growing population1.1.3 While individuals aged 10-19years are considered as adolescent, in this document there is a special focus on young men and women in the age group of 14-18 among the adolescents who constitute11% and 100.2 million of India's population. **(Status of children in 14-18 yrs, 2015).**

Body mass index(BMI) is a measure used to determine childhood overweight and obesity. Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex.BMI is calculated by dividing a person's weight in kilograms by the square of height in meters. For children and teens, BMI is age and

sex-specific and is often referred to as BMI-for-age. A child's weight status is determined using an age-and sex-specific percentile for BMI rather than the BMI categories used for adults. This is because children's body composition varies as they age and varies between boys and girls. Therefore, BMI level among children and teens need to be expressed relative to other children of the same age and sex. **(Centers for disease control and prevention, 2014)**

Obesity is an excessive accumulation of body fat such that individuals are over20 percent heavier than their ideal body weight. Obesity is a common eating disorder associated with adolescence. "Over weight" is defined as having any excess weight outside of the ideal range. Although children have fewer weight-related health problems than adults, overweight children are at high risk of becoming overweight adolescence and adults. Overweight people of all ages are prone to a number of health problems. **(Palo Alto medical foundation, 2014).**

According to the American Obesity Association and the Centers for Disease Control and Prevention, 30.3 percent of children aged six to 11 years are overweight and 15.3 percent are obese, and 30.4 percent of adolescents aged 12 to19 years are overweight and 15.5 percent are obese. From 1980to2004,the prevalence of obesity among children quadrupled, and the prevalence of obesity in adolescents more than doubled. Overweight and obesity is more prevalent in boys(32.7%) than girls (27.8%).Obesity is more common in African American, Hispanic American children and adolescents, than among Caucasians of the same ages. **(Health Of Children, 2014)**

Public health professional agree that overweight and obesity have reached epidemic proportions in this country. Public health officials say physical inactivity and poor diet are catching up to tobacco as a significant threat to health. According to the most data from the 2003-2006 National Health and Nutrition Examination Survey, one out of five or 17 percent of U.S. children, ages 6 to 19, are overweight or obese**. (Dr. David R.Flum, 2014)**

Childhood obesity has more than doubled in children and tripled in adolescence in the past 30 years. The percentage of children aged 13-18 years in our country who were obese increased from 5% in 1980 to nearly 18% in 2010.In 2010. In 2010, more than one third of adolescence were overweight or obese. **(Malcolm J.Low,m.d., Ph.D., 2014)**

Obesity has become one of the most important public health problems in the United States and many other resource-rich countries and transitional economies. As the prevalence of obesity increased, so did the prevalence of the comorbidities associated with obesity. For this reason, it is imperative that health care providers identify overweight and obese children so that counseling and treatment can be provided. The comorbidities of obesity in childhood and adolescence include abnormalities in the endocrine, cardiovascular, gastrointestinal, pulmonary, orthopedic, neurologic, dermatologic, and psychosocial systems. Certain comorbidites, such as type 2 diabetes mellitus and steatohepatitis that used to be considered “adult diseases” are now regularly seen in obese children. Moreover, obesity during adolescence increases the risk for disease and premature death during adulthood, independent of obesity during adulthood. As an example, in a longitudinal study, females who had been overweight during

childhood had an increased risk of death from breast cancer and from all causes in adulthood. Males who had been overweight during childhood had an increased risk of death from ischemic heart disease. **(William J Klish, 2013).**

Epidemiology of Obesity in Children and Adolescents tasks the global ecological approach that is needed to understand the scope of the problem and its multiple causes and mechanisms, and to aid in developing more effective prevention and intervention programs. In the book's first half, experts present a descriptive summary of youth obesity trends in ten world regions, broken down by age group, gender, socioeconomic status, and risk factors. Complementing these findings, part two review the evidence base regarding the variables, separately and in combination, having the most significant impact on young people's development of obesity, including: Genetic and nutrigenomic factors. Environmental and psychosocial factors, such as family shopping and eating habits and access to healthful foods. Neuro endocrine regulation. Prenatal and neonatal factors (e.g., gestational diabetes of the mother). Dietary factors, from nutrient content to young people's food preferences. Physical activity versus sedentary behavior. **(Luis Moreno Aznar, 2013)**

Low cardiorespirator fitness and reductions in fitness over time are significantly associated with weight gain and the risk of being overweight in children aged 6-15 years. Analysis on a cohort of 902 schoolchildren showed higher waist circumference and disproportionate weight gain over a 12-month follow-up period in those children with low cardio respiratory fitness. The 12-month risk of overweight classification was 3.5 –fold higher in youth with low cardio respiratory fitness, relative to fit peers. Reductions in cardio respiratory

fitness were significantly and independently associated with increasing BMI. Low levels of cardio respiratory fitness have also been associated with elevated depressive symptoms in obese adolescents." Previous studies have indicated that perceived overweight in normal -weight adolescents can lead to unnecessary, sometimes unhealthy dieting behaviors and in extreme cases may result in clinical eating disorders." **McGavock et al, (2013)**

Julie Sharp, head of health information at Cancer Research UK. said: "Overweight teenagers are more likely to become overweight adults at higher risk of cancer. So it's important that young people who are too heavy have support to be more active and make healthy changes to their diet. Being aware that are above a healthy weight could be a first step. Making these changes as teenagers could help protect them from cancer as adults."

Self-esteem is an experience. It is a particular way of experiencing the self. It is a good deal more than a mere feeling-this must be stressed. It involves emotional, evaluative, and cognitive components. It also entails certain action dispositions: to move toward life rather than away from it; to move toward consciousness rather than away from it; to treat facts with respect rather than denial; to operate self-responsibly rather than the opposite. **(Nathaniel Branden, 2013)**.

Self-esteem is the way individuals think and feel about themselves and how well they do things that are important to them. In children, self-esteem is shaped by what they think and feel about themselves. Their self-esteem is highest when they see themselves as approximating their "ideal" self, the person they would like to be. Children who have high self-esteem have an easier time handling conflicts,

resisting negative pressures, and making friends. They laugh and smile more and have a generally optimistic view of the world and their life. **(Health of Children, 2013).**

Self-esteem is usually broadly defined as a person's overall evaluation of, or attitude toward, her-or himself. However, vigorous disagreement exists regarding precisely what self- esteem is and why people experience it in the way that they do. **James (2013)**

Obese teens have significantly lower self-esteem than teens of normal weight. Low self-esteem often appears as loneliness, nervousness and sadness. Teens with low self-esteem may also engage in risky behavior such as experimenting with drugs, alcohol or cigarettes. Obese teens who experience low self –esteem during childhood and adolescence often carry these feeling into adulthood. **Dr.Richard Strauss (2013)**

The biggest factor in that study was the food journal. Those who maintained food diary more regularly, lost an average of 12.8% of their weight, than who did exercises they lose about only 8.5%. **Dr.Anne Mc Tiernan (2012)**

A study and found that those who wrote a diary of what they ate seven days a week dropped an average of almost 18 pounds over the course of the experiment. **Dr.Jack Hollis (2011)**

As the incidence and complications of adolescence obesity is more, chance of complications also more. So the researcher is interested in doing a study on obese adolescence in order to reduce the complications and to increase the level of self esteem by educating the adolescence about the food diary and its maintenance.

## STATEMENT OF THE PROBLEM

**Effectiveness of food diary on obesity parameters among obese adolescent girls in selected schools, Namakkal District.**

## OBJECTIVES OF THE STUDY

1. To assess the level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group.

2. To assess the effectiveness of food diary on obesity parameters among obese adolescent girls in experimental and control group.

3. To find out association between the post test score of obesity parameters among obese adolescent girls and their selected demographical variable in experimental and control group.

## HYPOTHESIS

$H_1$ : There is a significant level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group.

$H_2$ : There is significant effect of food diary on obesity parameters among obese adolescent girls in control group than experimental group.

$H_3$ : There is a significant association between the post test scores of obesity parameters among obese adolescent girls and selected demographic variables in experimental and control group.

## OPERATIONAL DEFINITIONS

### Effectiveness

It refers to the significant reduction of weight, BMI and improvement in the self esteem as determined between post tests scores of control group than experimental group.

### Food diary

It includes definition of adolescent obesity, methods calculating BMI, cause obesity, adverse effects of obesity, normal daily caloric intake, caloric values of normal south Indian food and calculating daily caloric intake, which is given to the obese adolescent is for 4 weeks.

### Obesity parameters

It includes biophysiological parameters and psychological parameter. In biophysiological parameters, weight and BMI which is measured by observational scale on obesity parameters. In psychological parameter self esteem, which is measured by using Rosenberg self esteem scale.

### Obese Adolescent girls:

It refers girls between the age group of about 15-17 years and weight between 50-60kg and BMI between 30-35.

## LIMITATIONS OF THE STUDY

The study is limited to:

- Assess the effectiveness of food diary.
- Identify the changes in obesity parameters.
- Obese girls who is willing to participate.
- Who is present during data collection.

## CONCEPTUAL FRAME WORK BASED ON IMOGENE KING'S GOAL ATTAINMENT THEORY

A conceptual frame work refers to a frame work of prepositions for conducting research.

Conceptual frame work provides clear description of variables suggesting ways or method to conduct the study and guiding the interpretation, evaluation and integration of study findings. **(Polit and Hungler, 2013)**

A theoretical framework can be defined as set of concepts and assumptions that integrates them into meaningful configuration. **(Pawett, 2013).**

Variables means, when conducting research a theoretical frame work serves as a guide of map to systematically identify a logical, precisely defined relationship between the variables. **Wood and Helper (2012)**

This study is based on **Imogene King's goal attainment theory (1997)** which would be relevant to reduce the level of obesity parameters and to maintain the self esteem by maintaining food diary among obese adolescence girls.

Imogene King's system is an "open" system. In this system, humans are in constant interaction with their environment. According to **Imogene King** each individual on this system has good directed choice of perceived alternative in made and acted by individuals or groups to attain a goal. It is a process of human interaction in which two people who are usually strangers come together in a health care organization to help and to be helped to maintain a state of health that permit, functioning the roles. The main concepts in Imogene King's open system are:

**Perception**

A process of organizing, interpreting and transforming information from sense data and memory that gives meaning to one's experience represents one's image of reality and influences one's behavior.

In this study researcher and the subject were come together for an interaction, a different set of perception to exchange. The researcher perceived that the obese adolescence had increased level of obesity parameters and low self esteem.

**Judgment**

Each member of the dyed perceives the other and makes judgment for goal attainment. The researcher wants to decrease the level of obesity parameters and improve the level self esteem.

**Action**

Each member dyad makes judgment and thereby action follows to attain goal. The researcher planned to educate food diary and encourage them to maintain daily.

**Mutual goal setting**

It is an activity that includes the adolescence girls and parents when appropriates in prioritizing the goal care and in developing a plan of action to achieve the goal. The researcher given food diary to maintain daily.

**Interaction**

The acts of two or more persons in mutual presence a sequence of verbal and non verbal behaviors that are goal directed. The researcher trains the adolescence girls to maintain the food diary daily which helps them to maintain their own diet pattern.

**Transaction**

A process of interaction in which human beings communicate with the environment to achieve goals with a value goal directed human behavior. In this model, human are in constant interaction with their environment. Adjustment to life and health are influenced by individual interaction with the environment. Each human being perceives the world as a total person in making transaction with the transaction with the individual and things in the environment.

The transactions between the subjects and the researcher were the posttest which was conducted by using the Rosen berg self esteem scale to assess the self esteem. The goal is said to be achieved when there is decreased level of obesity parameters and normal self esteem.

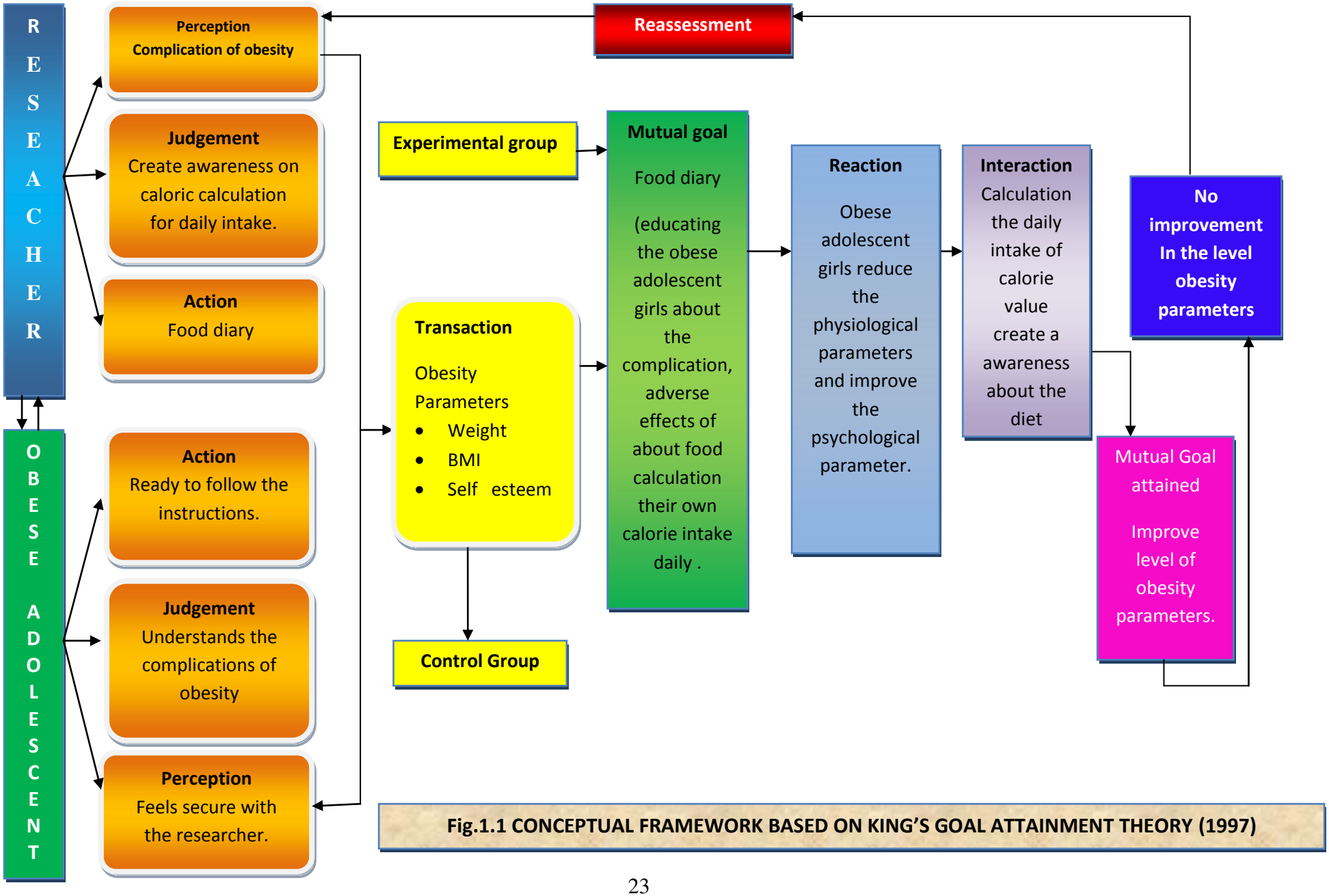


**Fig.1.1 CONCEPTUAL FRAMEWORK BASED ON KING'S GOAL ATTAINMENT THEORY (1997)**

# CHAPTER – II

## REVIEW OF LITERATURE

The review of literature is a broad, comprehensive, in depth, systematic and critical review of scholarly publication, unpublished scholarly print materials audio visual materials and personal communication.

Review of literature helps to plan and conduct the study in a systematic manner. Review of literature is the task of reviewing literature which involves the identification, selection, critical analysis, and reporting of existing information on the topic of interest. It provides the basis to locate the data, new ideas that need to be included in the present study. It helps the researcher to find out the accurate data that could be used for supporting the present finding and drawing conclusion.

The review of literature in this study is organized and divided into four under the following headings:

1. Studies related to obesity among adolescents
2. Studies related to self esteem among obese adolescence.
3. Studies related to food diary maintenance
4. Studies related to food diary maintenance among obese adolescents.

## I. STUDIES RELATED TO OBESITY AMONG ADOLESCENCE

**Lokuruka (2017)** to assess gender differences among Kuwaiti adolescents in healthy living choices that impact the risk of obesity. A cross-sectional multistage cluster design was employed with a representative sample of 2672 students aged 13–15 years who completed a self-administered Global School-based Student Health (GSHS) survey. The study found that around 48.0% of adolescents were overweight and obese. More boys than girls were obese (28.2% vs. 22.3%, $p < 0.0001$). However, boys were more likely than girls to report healthy food choices regarding fruit (38.1% vs. 33.2%), and vegetables (21.8% vs. 16.7%). Only 20.7% of adolescents reported physical activity for more than 60 min/day, predominately by boys rather than girls (30.8% vs. 10.5%, respectively, $p < 0.0001$). Multivariate analysis revealed that male gender, skipping breakfast and physical inactivity were significantly correlated with the risk of overweight and obesity among adolescents. These results suggest that lifestyle education for promoting healthy body masses targeting adolescents should take gender into account.

**Krushnapriya Sahoo, et.al., (2015)** The growing issue of childhood obesity can be slowed, if society focuses on the causes. There are many components that play into childhood obesity, some being more crucial than others, a combined diet and physical activity intervention conducted in the community with a school component is more effective at preventing obesity o over weight. Moreover, if parents enforce a healthier life style at home, many obesity problems could be avoided. What children learn at home about eating healthy, exercising and making the right nutritional choices will eventually spill over into other aspects of their life.

Focusing on these causes may over time reduce childhood obesity and lead a healthier society as a whole.

**Abdul Rahman,et.al., (2012)** The aim of this study was to find out the prevalence of overweight and obesity among adolescents in seven Arab countries using similar reference standard. A school-based cross-sectional study was carried out in seven cities in Arab countries, namely, Algeria, Jordan, Kuwait, Libya, Palestine, Syria, and United Arab Emirates. A multistages stratified random sampling technique was used. The total sample included was 4698 adolescents aged from 15 to 18 years (2240 males, 2458 females). The International Obesity Task Force (IOTF) reference standard was used to classify the adolescents as non obese, overweight, and obese. Among males, overweight was highest among Kuwaiti adolescents(25.6%),followed by Jordanian (21.6%), and Syrian (19.7%) adolescents. Among females, the highest prevalence of overweight was reported in Libyan adolescents(26.6%), followed by Kuwaiti(20.8%),and Syrian(19.7%) adolescents. As for obesity, Kuwaiti adolescents showed the highest prevalence of obesity for both males (34.8%) and females (20.6%). Conclusion: There is a urgent need to establish a plan combat obesity in school children in these countries.

**Garvita Jain, Dr, et.al., (2012)** conducted the co relational study to assess the prevalence of overweight and obesity as defined by the CDC growth chart among school going children in Bhili Nagar, Chattisgarh correlated with their socioeconomic status and eating habits. The study was carried out in 500 students of 13-17 yrs of age having different SES. The obesity and overweight were considered using an updated BMI reference. SES and eating habits were determined

using pretested questionnaire. The prevalence of overweight/ obesity is a problem of affluent children going to various schools in Bhili city. In the present study it is found that the magnitude of overweight(23.8%) and obesity (8.4%) is very high and alarming for both the sex, eating habits like junk food, chocolate, eating in front of TV etc remarkable effect on prevalence on overweight and obesity among low to high SES group. The study also suggested that under nutrition

**Rachel Richey (2012)** This study, undergirded by family systems theory, examined the extent to which parent and family-level factors correlate with adolescent obesity and depressive symptoms. We also considered whether these variables predict unique variance in adolescent obesity and depressive symptoms. The participants were a convenience sample of 77 racially diverse, predominantly early adolescents (aged 12 to 17) and their parents. Results from a series of linear and logistic regression analyses indicated that three of the study factors (parental weight history, family resources and adolescent weight history) significantly contributed to the variance in adolescents' body mass indexes and only one of the study factors (parental depressive symptomatology) significantly contributed to the variance in adolescents' rates of depressive symptomatology. These preliminary findings clarify how parent and family system factors might inform family and school-based intervention and treatment efforts for adolescent health outcomes.

**Victor C.Strasburg, MD (2011)**, obesity has become a worldwide public health problem. Considerable research has shown that the media contribute to the development of child and adolescent obesity, althought the exact mechanism remains unclear. Screen time may displace more active pursuits, advertising of junk

food and fast food increase children's requests for those particular foods products , snacking increases while watching TV or movies, and late-night screen time may interfere with getting adequate amounts of sleep, which is a known risk factor for obesity. Sufficient evidence exists to warrant a ban on junk-food or fast-food advertising in children's TV programming. Pediatricians need to ask 2 questions about media use at every well-child or well-adolescent visit: (1) how much screen time is being spent per day? And (2) Is there a TV set or Internet connection in the child,s bedroom?

**Umarani.J. Chauhan (2010),** Association between eating habits and BMI of adolescents. The stuffy concludes that adolescent's eating habit and weight status is a cumulative effect of the health and nutritional problem occurring during early childhood as well as those originating in adolescence. Majority (69.3%)of the adolescent had healthy eating habits and (30.7%) were having unhealthy eating habits. As per the BMI assessment, it found that 34% belonged to normal and weight,21.44%were obese and 10.66% were over weight. It was also found that there was no co-relation between BMI and eating habit.

## II. STUDIES RELATED TO SELF ESTEEM AMONG OBESE ADOLESCENCE

**Seyed Mehrshad Parvin Hosseini, P, (2016)** Obesity and the side effects of weight gain among Iranian females are significantly higher compared to males. In addition, the trend of overweight and obesity among Iranian adolescents in particular is increasing. The objective of this paper was to determine the relationship between

body weight status and self-esteem also to evaluate the important role of weight status between the sexes in a conservative society like the Islamic Republic of Iran. Data were obtained from 450 pre-university students, aged 16-19 years old, in the city of Kashan in Iran. Students were divided based on ascending order into three categories, namely: healthy weight, overweight, and obese. The Rosenberg's Self-esteem Scale was administered to measure level of self-esteem. Body Mass Index was calculated using weight and height measures. The definitions of overweight and obesity were based on age and sex specific BMI (Body Mass Index) cut-off points of the Centers for Disease Control(CDC) and Prevention growth chart 2008. An ordered probit analysis was conducted and the marginal effects of self-esteem and otherpredictors of self-esteem on body weight status were calculated. Evaluation of gender and self-esteem estimated by a separate binary Probitmodel.

**Richard S. Strauss, MD (2015)** Although childhood obesity may have detrimental consequences for childhood self-esteem, the prevalence and magnitude of this problem is controversial. In addition, the social and emotional effects of decreased self-esteem in obese children are unknown. Methods. A total of 1520 children, 9 to 10 years of age, born to mothers in the National Longitudinal Survey of Youth were studied. Comprehensive demographic data including race and family income were available in 97%of the cohort. Self-esteem was measured using Self Perception Profile for Children. The 4-year follow-up Self-Perception Profile for Children scores were available in 79% of the children. Obesity was defined as a body mass index greater than the 95th percentile for age and gender. Additional data include a self-administered questionnaire at 13 to 14 years of age concerning emotional well being, smoking, and alcohol consumption. Data were stratified by

race and gender. The data were weighted to reflect a nationally representative sample of children born to mothers 17 to 28 years of age.

**Laura Krause and Thomas Lampert (2015)** conducted a study to investigate the relation between overweight/obesity and self-rated health (SRH), and whether this relation varies by social factors. Data was taken from the German Health Interview and Examination Survey for children and Adolescents. For the definition of overweight and obesity ,body mass index was calculated based on standardized height and weight measurements.SRH of adolescents (n=6813,11-17 years) was raised with the question: "How would you describe your health in general?"The response categories were "very good", "good", "fair", "poor", and "very poor". We dichotomized these responses into: "very good/good"vs." fair/poor/very poor".Socio –economic status (SES) in the family of origin and adolescents' school type were analysed as modifying factors. Prevalence and age-adjusted odds ratios with 95% confidence intervals were calculated by binary logistic regression models. We found that overweight and obese boys and obese girls reported fair to very poor SRH more often than their normal weight pressure, and that these differences were more apparent in early than late adolescence .In addition, the relation between obesity and SRH was similarly strong in all sub-groups, but there was seldom a relation between overweight and SRH. In summary, the results show that obesity is linked to poor SRH regardless of SES and school type, while the relation between overweight and SRH varies by social factors among adolescents.

**Amal Hamdan Al Anizy (2015)** to examine the relationship between BMI, self-esteem and quality of life among Saudi Adolescent females. A descriptive correlational design was used. A convenience sample of 416 participants was included. An explanation about the purpose and the nature of the study was offered for each participant. Qualified subjects were asked to complete the survey questionnaire and get their weight and height measured. Voluntary participation was assured. The inclusion criteria were Saudi nationality, age range between 14 to 21, and no history of chronic diseases, Three tools were used to collect data: the socio demographic part, Rosenberg's (1965) Self-Esteem Scale (RSE), and Quality of Life Scale (QOLS). The validity and reliability of the measurements were ensured. Data was collected from public places.

**William W Wong (2014)** conducted a study about the relationship between body weight and self-esteem among underserved minority children is not well documented. They measured the self-esteem profile using the self-perception profile for children among 910 minority children at 17 Houston community centers. Weight status had no effect on any of the self-esteem scores among the minority children(P_>0.21).Black children had higher scholastic competence than Hispanic children(P=0.05).Social acceptance was not affected by age, gender, and race/ethnicity (P>_0.13).Significant age x gender (P=0.006) and race x gender (P=0.005) interactions were detected on athlestic competence. The Younger boys had higher athlestic competence than the younger and older girls (P<_0.01).The older boys had higher athletic competence than the older girls(P=0.008)but their scores were not different from those of the younger girls(P=0.07).Within each race/ethnicity group, boys had higher athletic competence than girls(P<_0.03).Black

boys had higher competence than Hispanic girls (P=0.007) but their scores were not different from those of the Hispanic boys(P=0.08).Age and gender had no effect on physical appearance but black children had higher scores than Hispanic children(P=0.05). Behavioural conduct was not affected by age, gender, or race/ethnicity (P>_0.11).There was an age x gender interaction on global self-worth(P=0.02)with boys having similar scores regardless of ages (P=0.40) or ethnicity (P=0.98). However, boys from both age groups had higher global self-worth than the older girls(P<_0.04) but their scores were not different from those of the younger girls(P>_0.07).For the first time ,we documented that being normal weight did not necessarily guarantee positive self-esteem among minority children. Their self-esteem scores were similar to those found among children who were diagnosed with obesity and obesity-related co-morbidities and lower than those reported among normal-weight white children. Therefore, activities to promote self-esteem are important when working with underserved minority children in order to promote a healthy lifestyle.

**Auden C McClure MD (2010)** conducted a co relational study to examine characteristics associated with low self- esteem in a large national sample of young adolescents. Population –based correlation study. A sample of 6522 adolescents , aged 12-16 years, was surveyed by phone as part of a national study of media and substance use. Self-esteem was measured with three questions that assessed global self worth and physical appearance. Multivariate logistic regression was used to examine the relation between self-esteem and socio-demographics, child personality characteristics, weight status, daily TV time, parenting style, school performance and team sports participation. Interactions among gender ,race, and weight status

were examined. In multivariate analysis, female gender, Hispanic race, overweight and obesity, sensation seeking, rebelliousness, and daily TV time were each independently associated with lower self-esteem. Teens of Black race, with higher parental responsiveness and demandingness, school performance or involvement in team sports were less likely to report low self-esteem. Black females were at lower risks and Hispanic males were at higher risk for low esteem than peers of similar gender of other races. Low self-esteem was associated with a number of modifiable risk factors including obesity, television time, team sports participation, school performance and parenting style that should be discussed with teens and parents at health supervision visits. Further research examining race and gender – specific factors that serve to moderate risk for poor self-esteem in adolescents is warranted.

## III. STUDIES RELATED TO FOOD DIARY MAINTENANCE

**Palakorn Achananupar (2016)** to support people trying to lose weight and stay healthy, more and more fitness apps have sprungup including the ability to track both calories intake and expenditure. Users of such apps are partof a wider "quantified self" movement and many opt-in to publicly share their logged data. In this paper, we use public food diaries of more than 4,000 long-term active MyFitnessPal users to study the characteristics of a (un-)successful diet. Concretely, we train a machine learning model to predict repeatedly being over or under self-set daily calories goals and then look at which features contribute to the model's prediction. Our findings include both expected results, such as the token "mcdonalds" or the category "dessert" being indicative for being over the calories

goal, but also less obvious one such as the difference between pork and poultry concerning dieting success, or the use of the “quick added calories” functionality being indicative of over-shooting calorie-wise. This study also hintsat the feasibility of using such data for more in-depth data mining, e.g., looking at the interaction between consumed foods such as mixing protein- and carbohydrate-rich foods. To the best of our knowledge, this is the first systematic study of public food diaries.

**Larissa Pereira Aguiar (2015)** To investigate whether maintenance of exercise training benefits is associated with adequate milk and dairy products intake in hypertensive elderly subjects after detraining. Twenty-eight elderly hypertensive patients with optimal clinical treatment underwent 16 weeks of multicomponent exercise training program followed by 6 weeks of detraining, and were classified according to milk and dairy products intake as low milk (<3 servings) and high milk (≥3 servings) groups. After exercise training, there was a significant reduction ($p<0.001$) in body weight, systolic, diastolic and mean blood pressure, an increase in lower and upper limb strength (chair-stand test and elbow flexor test) as well as in aerobic capacity (stationary gait test) and functional capacity(sit down, stand up, and move around the house) in both groups. However, in the Low Milk Intake Group significant changes were observed: body weight (+0.5%), systolic, diastolic and mean blood pressure (+0.9%,+1.4% and +1.1%, respectively), lower extremity strength (-7.0%), aerobic capacity (-3.9%) and functional capacital (+5.4) after detraining. These parameters showed no significant differences between post-detraining and post-training period in High Milk Intake Group.

**JackHollis (2013)** The more food records people kept, the more weight they lost, 'It seems that the simple act of writing down what you eat encourage people to consume fewer calories. "In addition to keeping food diaries and turning them in at weekly support group meetings, participants were asked to follow a heart- healthy DASH(a dietary approaches to stop hypertension) diet rich in fruits and vegetables and low-fat or non-fat diary, attend weekly group sessions and exercise at moderate intensity levels for at least 30 minutes a day. After six months, the average weight loss among the nearly 1700 Participants (69%)lost at least nine pounds, enough to reduce health risks and qualify for the second phase of the study, which lasted 30 months and tested strategies for maintaining the weight loss.

**Center for Nutrition Policy and Promotion (2012)** Maintaining a healthy body weight is vital for good health. However, many Americans are overweight or obese, indicating that they consume more calories from foods and beverages than they expend through physical activity and normal bodily functions. A growing body of research has investigated the impact of various dietary behaviors, such as self-monitoring of dietary intake, on body weight. Dietary self-monitoring is the process of recording food and beverage intake, including a description of the type and amount of foods and beverages that are consumed. Occasionally, self-monitoring may include information related to context of eating situations such as the time, location, emotional state, or hunger status. Self-monitoring of food intake is a common component of many weight loss interventions, particularly cognitive behavioral weight loss programs, since it promotes self awareness and helps tailor behavior change initiatives. This Nutrition Insight provides an overview of the systematic review on the relationship between diet self-monitoring and body weight

conducted by the 2010 Dietary Guidelines Advisory Committee (DGAC) and the USDA Nutrition Evidence Library (NEL) to support the development of the Dietary Guidelines for Americans, 2010 were rated neutral quality. The studies were conducted in the United States and Japan. Studies ranged in size from 42 to 588 subjects, and all 7 studies included both men and women. Six out of the seven studies reviewed found that diet self-monitoring was associated with greater weight loss. One study found no relationship between diet self-monitoring and weight loss. All seven studies examined a weight loss or weight loss maintenance program in overweight or obese adults with adiet self-monitoring component. The self-monitoring piececonsisted of keeping a daily record of food consumed, with a focus on monitoring calorie intake. Also, in most studies, participants self-monitored intake using a simple paper food diary, though a few studies used a form of technology for monitoring.

**Lora E.Burke, et.al., (2011)** conducted a Meta analysis regarding a systematic review of the literature on three components of self-monitoring in behavioural weight loss studies: diet, exercise and self-weighing .This review included articles that were published between 1993 and 2009 that reported on the relationship between weight loss and these self-monitoring strategies. Of the 22 studies identified,14 focused on dietary self-monitoring, one on self-monitoring exercise and six on self-weighing. A wide array of methods was used to perform self- monitoring; the paper diary was used most often. Adherence to self-monitoring was reported most frequently as the number of diaries completed or the frequency of log-ins or reported weights. The use of technology, which included the Internet , personal digital assistants and electronic digital scales were reported in five studies. Descriptive designs were used in the earlier studies while more

recent reports involved prospective studies and randomized trials that examined the effect of self-monitoring on weight loss. A significant association between self-monitoring and weight loss was consistently found; however, the level of evidence was weak because of methodological limitations. The most significant limitations of the reviewed studies were the homogenous samples and reliance on self-report. In all but two studies, the samples were predominantly White and female. This review highlights the need for studies in more diverse populations, for objective measures of adherence to self-monitoring, and for studies that establish the required dose of self-monitoring for successful outcomes.

**Vichuda L Matthews, (2011)** conducted to study to investigate the association between the risk of overweight and the consumption of food groups in children and adolescents. We studied 1764 healthy children and adolescents (age6-19 yr) attending 16 seventh-Day Adventist schools and 13 public schools using a 106-iteam non-quantitative food frequency questionnaire from the late 1980) Child-Adolescent Blood Pressure study. Logistic regression Models were used to compute the risk of overweight according to consumption of grains, nuts, vegetables, fruits, meats/ fish/ eggs, diary, and low nutrient-dense foods(LNDF).the frequency of consumption of grains , nuts , vegetables and LNDF were inversely related to the risk of being overweight and dairy increased the risk. Specifically , the odds ratio (95% CI) for children in the highest quartile or tertile of consumption compared with the lowest quartile or tertile were as follows: grains 0.59(0.41-0.83); nuts 0.60(0.43-0.85); vegetables 0.67(0.48-0.94); LNDF 0.43(0.29-0.63); and; dairy 1.36 (0.97,1.92). The regular intake of specific plant foods may prevent overweight among children and adolescent.

**Jack F.Holis (2008),** conducted a study to improve methods for long-term weight management, the Weight Loss Maintenance (WLM)trial , a four- center randomized trial, was conducted to compare alternative strategies for maintaining weight loss over a 30- month period. This paper describes methods and results for the initial 6-month weight –loss program (Phase I). Eligible adults were aged >_25,overweight or obese (BMI=25-45kg/m2), and on medications for hypertension and/or dyslipidaemia. Anthropomorphic, demographic, and psychosocial measures were collected at baseline and 6 months. Participants(n=1685)attended 20 weekly group sessions to encourage calorie restriction, moderate-intensity physical activity,and the DASA(dietary approaches to stop hypertension) dietary pattern. Weight-loss predictors with missing data were replaced by multiple imputation . participation were 44% African American and 67% women; 79% were obese (BMI>_30),87% were taking anti-hypertensive medications, and 38% were taking anti dyslipidemia medications. Participants attended an average of 72% of 20 group sessions. They self-reported 117 minutes of moderate –intensity physical activity per week ,kept 3.7 daily food records per week, and consumed 2.9 serving of fruit and vegetables per day. The Phase- I follow-up rate was92%.Mean (SD) weight change was-5.8kg(4.4),and 69% lost at least 4 kg. All race-gender subgroup lost substantial weight: African-American men(-5.4kg+_7.7); African-American women(-4.1kg+_2.9); non-African-American men (-8.5kg+_12.9); and non African-American women (-5.8kg +_6.1) Behavioural measures (eg., diet records and physical activity) accounted for most of the weight-loss variation, although the association between behavioural measures and weight loss differed by race and gender groups.

## IV. STUDIES RELATED TO FOOD DIARY MAINTENANCE AMONG OBESE ADOLESCENTS

**Yvonne C. Anderson (2016)** The aim of this study was to describe dietary intake and eating behaviours of obese children and adolescents, and also to determine how these differ in Indigenous versus non-Indigenous children at enrolment in an obesity programme. Baseline dietary intake and eating behaviour records were assessed from those enrolled in a clinical unblinded randomised controlled trial of a multi-disciplinary intervention. The setting was a community-based obesity programme in Taranaki, New Zealand. Children or adolescents who were enrolled from January 2012 to August 2014, with a BMI 98th percentile or >91st centile with weight-related comorbidities were eligible239 participants (45% Māori, 45% NZ Europeans, 10% other ethnicities), aged 5–17 years were assessed. Two-thirds of participants experienced hyperphagia and half were not satiated after a meal. Comfort eating was reported by 62% of participants, and daily energy intake was above the recommended guidelines for 54%. Fruit and vegetable intake was suboptimal compared with the recommended 5 servings per day (mean 3.5 [SD = 1.9] servings per day), and the mean weekly breakfasts were less than the national average (5.9 vs6.5; $p<0.0001$). Median sweet drink intake amongst Māori was twice that of NZ Europeans(250 vs 125 ml per day; $p = 0.0002$). There was a concerning prevalence of abnormal eating behaviours and significant differences in dietary intake between obese participants and their national counterparts. Ethnic differences between Indigenous and non-Indigenous participants were also present, especially in relation to sweet drink consumption. Eating behaviours, especially sweet drink consumption and fruit/vegetable intake need to be addressed.

**Marla Reicks (2015**) Among early adolescents (10–16 years), poor diet quality along with physical inactivity can contribute to an increased risk of obesity and associated biomarkers for chronic disease. Approximately one-third of United States (USA) children in this age group are overweight or obese. Therefore, attention to factors affecting dietary intake as one of the primary contributors to obesity is important. Early adolescents consume foods and beverages during eating occasions that occur with and without parental supervision. Parents may influence eating behaviors of early adolescents during eating occasions when they are present or during independent eating occasions by engaging in practices that affect availability of foods and beverages, and through perceived normative beliefs and expectations for intake. Therefore, the purpose of this article was to describe the influence of parenting practices on eating behaviors in general and when specifically applied to independent eating occasions of early adolescents. This information may be helpful to inform parenting interventions targeting obesity prevention among early adolescents focusing on independent eating occasions.

**Elstin Mary S (2014)** Increasing incidence of lifestyle disorders among Indians are largely attributed by unhealthy lifestyle practices like poor dietary pattern, inadequate physical activity, smoking, alcohol consumption and stress. Lifestyle modification programs are proved effective in behaviour modification and promotion of healthy lifestyle practices among adolescents. A school based interventional study was conducted among adolescents with the objective t Keywords : Lifestyle management program, lifestyle practice, knowledge, adolescents. 1 2 3 Elstin Mary S. , Anjalin D'souza & Erna Judith Roach 1 2 3 Student M. Sc. (N), Assistant Professor (Senior Scale), Associate Dean & Professor,

Department of Child Health Nursing, Manipal College of Nursing, Manipal University Manipal - 576 104, Karnataka, India. Correspondence Elstin Mary S. Puthusseriyil (H), Veliyambam (PO), Pulpally, Wayanad – 673579, Kerala, India . Mobile: +91 82773 43934 E-mail : elstinmary@gmail.com o determine the effectiveness of the lifestyle management program in terms of gain in knowledge on lifestyle disorders and change in self-reported lifestyle practices. The study was conducted in two phases. Initially, a baseline data on the lifestyle practices and knowledge on lifestyle disorders was obtained from the adolescents, which was utilized to select the adolescents with poor and average knowledge and unhealthy practices for whom the intervention was implemented. Changes in lifestyle disorder related knowledge and lifestyle practices were tested using a structured knowledge questionnaire and lifestyle assessment scale. After two weeks of the intervention, a post-test was carried out and a significant improvement in knowledge (Z= 12.39, P = 0.001) and lifestyle practice (Z= 5.52, P = 0.001) were identified. The educational package for lifestyle modification was successful in improving the knowledge on lifestyle diseases and lifestyle practices among adolescents and thereby in prevention of lifestyle disorders.

**Jennifer A O'Dea (2010)** This article details recent studies of body weight, obesity, body image and related health issues among Australian adolescents and the ways in which subsequent nutrition and physical activity programs in schools can interact with and complement each other, rather than contradicting or competing with each other. He briefly identify and discuss the commonalities between health promotion, obesity prevention, body image improvement, eating disorder prevention and promotion of physical activity. In this article he present for the first time the

findings of a 2009 research study examining the recent barriers to participation in sport, physical education and physical activity from a study of 1000 Australian children and adolescents. These findings illustrate the complex interrelationships between various adolescent health issues and their prevention. Finally, I belheeve that preventing the co-existing problems of obesity, low physical activity, disordered eating and body image concerns among adolescents is very challenging and requires a thoughtful, careful community involvement strategy. He suggest that it would be a mistake to target any sort of weight loss or weight control message towards adolescent girls, many of whom clearly already have a fear of fatness, an apparent body image problem and low self-esteem. Similarly, he recommend that it would be culturally inappropriate to approach obesity prevention among ethnic groups of overweight or obese adolescents and their families without serious consideration of the potentially harmful, undesirable or culturally inappropriate outcomes. Several facets of prevention need attention when focusing on school-based health promotion, nutrition education and body image improvement using a whole-school approach, including school curricula, school ethos, school policies and school–community links.

# CHAPTER – III

## METHODOLOGY

Research methodology is a significant part of any study which enables the researcher to project the research undertaken. Research methodology is the systemic way to carry out an academic study. The methodology enables the research to project a blue print of the details approach; analysis and research undertaken. **(Abdullah, 2013).**

The present study was conducted to assess the effectiveness of food diary on obesity parameters among obese adolescents girls.

This chapter included research approach, research design, setting of the study, variables, population, sample, sample size, sampling techniques, criteria for the sample selections, developing and description of tool, data collection procedure, plan for data analysis and interpretation of the data.

### RESEARCH APPROACH

Research approach is the most essential part of any research. The entire study is based on it. The research approach used in the study is an applied form of research to find out how well the intervention is effective. In this study, the effectiveness of food diary on obesity parameters among obese adolescent girls are evaluated. Therefore a quantitative evaluative research approach is essential to assess its effectiveness.

## RESEARCH DESIGN

Research design incorporates the most imported methodological decisions that a researcher makes in conducting a research study. It depicts that the overall plan for organization of scientific investigations. It helps the researcher in the selection of subjects, manipulation of independent variables and observation of a type of statistical method to be used to interpret the data. The selection of the design depends upon the purpose of the study, research approach and variables to be studied. **(Polit and Hungler, 2013).**

The research design used for the present study was quasi experimental design where **pre and post test with control group design** was selected to assess the effectiveness of food diary on obesity parameters among obese adolescents girls.

**Table 3.1 : Diagrammatic representation of research design**

| **Purposefully selected obese adolescent girls** | **Pre Test** | **Intervention** | **Post test** |
|---|---|---|---|
| Experimental group | $O_1$ | X | $O_2$ |
| Control group | $O_1$ | - | $O_2$ |

**The symbols used are,**

$O_1$ - pretest scores of obesity parameters in experimental group.

X - Food diary.

$O_2$ - Post test score of obesity parameters in experimental group.

$O_1$ - Pretest scores of obesity parameters in control group.

$O_2$ - Post test scores of obesity parameters in control group.

**SETTING OF THE STUDY**

Research setting are specific places in a research where data collection is to be made, The selection was done on the basis of the feasibility of conducting the study, availability of subject and permission of authorities. **(Polit and Hungler, 2013).**

**1. Experimental group:**

The obese adolescents girls selected from JKK Rangammal Higher Secondary School, Kumarapalyam, Namakkal District, which is 3 kms away from Sreesakthimayeil Institute of Nursing and Research. School has 150 adolescent girls population and 60 were obese adolescent girls and I selected 25 obese adolescent girls.

**2. Control group:**

The obese adolescent girls selected from Star Lion Matric Higher Secondary School, Kumarapalayam, Namakkal District, which is 10 kms away from Sreesakthimayeil Institute of Nursing and Research. School has 150 adolescent girls population and 40 were obese adolescent girls and I selected 25 obese adolescent girls.

## VARIABLES

Variables are characters that can have more than one value. The categories of variables discussed in the present study are,

### Independent Variable

The variables that is believed to care or influence the behaviour and ideas. **Polit and Hungler (2013)**

In this present study, the independent variables refers to Food Diary.

### Dependent Variable

The dependent variable is the researcher is interested in understanding, explaining, and proceeding. **Polit and Hungler (2013)**

In this present study, the dependent variable refers to Obesity parameters.

## POPULATION

Population refers to the entire aggregation of cases that meets the design criteria. **(Polit and Beck, 2013).**

The population for the present study was obese adolescent girls.

## SAMPLE

A sample is the portion of the population that has been selected to represent the population of interest. (**Talbot, 2010).**

The sample for the present study was obese adolescents girls at selected schools, Namakkal District.

**SAMPLE SIZE**

Sample size is normally decided by nature of the study, nature of the population, type of sampling technique, total variables, statistical test adopted for data analysis and sensitivity measures and attrition. **(Polit and Beck, 2013).**

The total sample size was 50 obese adolescent girls out of which experimental group was 25 and control group was 25.

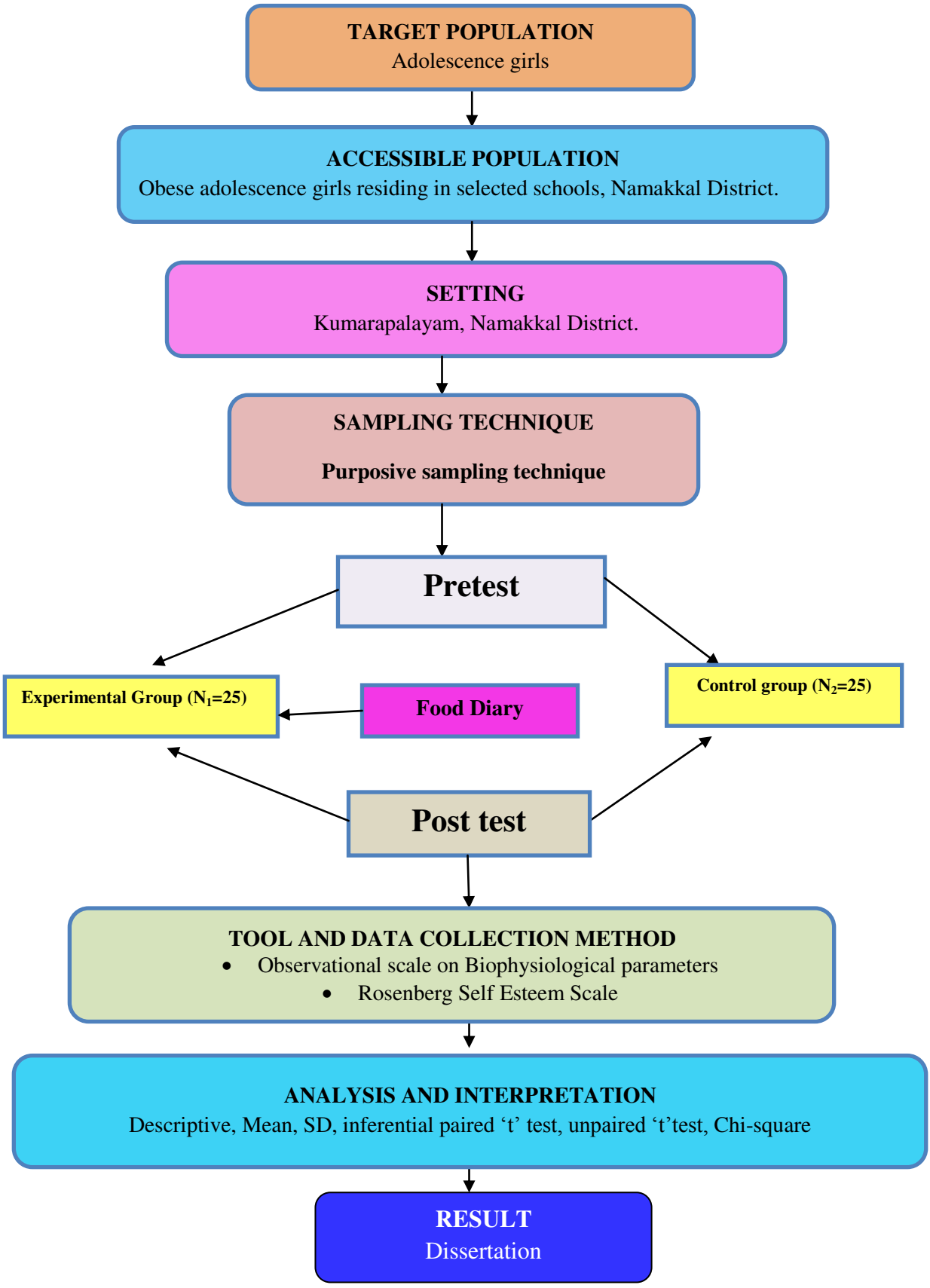


**Fig. 3.1: SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY**

## SAMPLING TECHNIQUE

Sampling is the process of selected a portion of the population who represent the entire population. (**Polit and Beck, 2012).**

In this present study, **Purposive Sampling Technique** was used to select all obese adolescence girls in selected school, Namakkal District.

Investigator adopted purposive sampling technique as a selection of samples. In that 25 obese adolescents girls were considered as experimental group and 25 obese adolescent girls were considered as control group. The reason for selecting two setting is to avoid contamination of samples in experimental group and control group.

## CRITERIA FOR SAMPLE SELECTION

### Inclusion criteria

Obese adolescents girls,

- Age group between 15 to 17 years
- Weight between 50-60 kg
- BMI between 30-35.
- Subject present during the period of data collection.
- Those who are giving consent to participate in the study.

**Exclusion criteria**

Obese adolescent girls

- Obesity due to pathological disorder like hyperthyroidism.
- Steroids included obesity.

**DEVELOPMENT OF THE TOOL**

There are three section of tool is used. They are,

**SECTION A:** It consists of demographic characteristics of adolescence with obese girls

- Age in years
- Income of parents per month
- Residential area
- Type of family
- Birth order
- Menstrual cycle
- Diet pattern.
- Family history of obesity.

**SECTION B**

a) It consists of Observational scale on obesity parameters. It is used to assess the level of obesity parameters among obese adolescent girls.

**Table 3.2 Observational rating scale on bio physiological parameters**

| Selected obesity parameters | Values |
|---|---|
| Weight | 50-60 Kg |
| BMI | 30-35 |

b) It consists of standardized Rosenberg Self Esteem Scale. It is used to assess the level of self esteem among obese adolescence girls. This scale consists of 3 levels of esteem. ie, low self esteem, within normal, high self esteem. Each parameters carries 3 scores. The total score was 30.

**SCORING PROCEDURE**

Based on the percentage of scores the level of self esteem was graded into 3 categories. They are “low self esteem”, “ within normal” and “High self esteem”.

**Table 3.3 Level of self esteem scoring**

| LEVEL OF SELF ESTEEM | SCORING |
|---|---|
| Low self esteem | < 15 |
| Within normal | 15 - 25 |
| High self esteem | > 25 |

## VALIDITY

The content validity of demographic variables and observational rating scale on obesity parameter is validated in consultation with guides and experts. The experts are Pediatric nursing personal, Pediatricians, Dietician, and Statistician. The tool was modified according to the suggestion and recommendation of experts.

## RELIABILTY

Reliability of research instruments defined as the extent to which the instrument has the same results on repeated measures. **Polit and Beck (2012)**

Observational scale on physiological parameters was tested by test retest method and the tool was found to be reliable. (r1=0.86).

Standardized scale on psychological parameters was tested by 'Split half method' and the tool was found to be reliable. (r2=0.85).

## DATA COLLECTION PROCEDURE

Data collection is the gathering of the information to address the research problem. The word data means information i.e. systematically collected in the course of study.

Data collection as gathering of information from the sampling unit. The research plan typically specifies procedures for actual collection of data. The researcher must be sure that enough material is available to complete the study that the participants are informed that the schedules do not conflict. **Talbott (2010**)

### Permission from the concerned authority

Prior to the collection of the data, permission obtained from the J.K.K. Nataraja Higher Secondary School, Kumarapalayam, Namakkal District for experimental group and Star Lion Matric Higher Secondary School, Kumarapalayam, Namakkal District for control group.

### Period of data collection

The data was collected 4 weeks. The investigator collected the data from both experimental group and control group.

### Pretest

Pre test was conducted on obese adolescent girls, by using observational rating scale on obesity parameter and Rosenberg's self esteem scale to assess the level of self esteem.

**Implementation of food diary:**

- Immediately after pre test, on first day, the researcher educates the obese adolescent girls individually about the food diary calculation of the caloric value for daily intake.
- From 2nd day onwards obese adolescent girls calculated their own caloric value daily and record that in the food diary, 3 times a day for 4 weeks.

**Posttest/ Evaluation of food diary:**

Posttest was conducted on 16th day and 31st day of intervention by using observational rating scale and Rosenberg self esteem scale among adolescent girls.

**PLAN FOR DATA ANALYSIS**

- Assess the level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group, were analyzed by using frequency and percentages distribution.

- Assess the effectiveness of food diary on obesity parameters among obese adolescent girls in experimental and control group, were analyzed by using mean, SD, paired t test and unpaired t test.

- Find out the association between the post test scores of obesity parameters among obese adolescent girls and their selected demographic variables in experimental and control group were analyzed by using chi-square test.

**SUMMARY**

A quasi-experimental design was carried on 50 obese adolescent girls among selected School, Namakkal District by using purposive sampling technique. The observational rating scale on obesity parameters and standardized Rosenberg self esteem scale was used to assess the level of obesity parameters among obese adolescent girls. The data were collected after obtaining permission from the J.K.K.Nattraja Higher Secondary School, Kumarapalayam, Namakkal District and Star Lion Matric Higher Secondary School, Kumarapalayam, Namakkal District. Data were planned to analysis by using descriptive and inferential statistics and to be presented in the form of table, figures and graph.

# CHAPTER – IV

## DATA ANALYSIS AND INTERPRETATION

Analysis is a 'process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested'. Analysis enables the research to reduce, summarize, organize, evaluate, interpret and communicate numerical information. **(Polit and Hungler, 2013).**

This chapter deals with the analysis and interpretation of data collected top assess the effectiveness of food diary on obesity parameters among 50 obese adolescent girls (25 experimental group and 25 control group) in selected schools, Namakkal District.

**The data were coded and analyzed as per objectives of the study under the following headings**.

**SECTION A: Frequency and percentage distribution of samples.**

- Description of samples according to their demographic variables.

**SECTION B: Assess the level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group.**

- Frequency and percentage distribution of pre and post test score of physiological parameters scale among obese adolescent girls in experimental group.

- Frequency and parameters distribution of pre and post test scores of physiological parameters scale among obese adolescent girls in control group.

- Frequency and percentage distribution of pre and post test scores of self esteem scale among obese adolescent girls in experimental group.

- Frequency and percentage distribution of pre and post test scores of self esteem scale among obese adolescent girls in control group.

**SECTION C: To assess the effectiveness of food diary on obesity parameters among obese adolescent girls in experimental and control group.**

- Mean and SD, of pre and post test scores of obesity parameters among experimental group and control group.

- Paired t' test value of pre and posttest scores of obesity parameters among experimental group and control group.

- Unpaired t' test value of post test scores of obesity parameters among experimental group and control group.

**SECTION D**: Find out the association between the post test scores of obesity parameters among obese adolescent girls and their selected demographic variables in experimental and control group.

- Chi-square value of association between the posttest scores of obesity parameters among obese adolescent girls in experimental group with their demographic variables.

- Chi-square value of association between the posttest scores of obesity parameters among obese adolescent girls in control group with their demographic variables.

**SECTION A: DESCRIPITION OF SAMPLES ACCORDING TO THEIR DEMOGRAPHIC VARIABLES**

**Table-4.1: Frequency and percentage distribution of demographic variables among obese adolescent girls in experimental group and control group.**

**($N_1$=25) ($N_2$ = 25)**

| S. No | Demographic variables | Experimental group ($N_1$ = 25) | | Control group ($N_2$ = 25) | |
|---|---|---|---|---|---|
| | | frequency | Percentage (%) | Frequency | Percentage (%) |
| 1 | **Age** | | | | |
| | a) 15Yrs | 10 | 40% | 10 | 40% |
| | b) 16yrs | 9 | 36% | 6 | 24% |
| | c) 17yrs | 6 | 24% | 9 | 36% |
| 2 | **Income of family (Rs/month).** | | | | |
| | a)5000-10,000 | 11 | 44% | 9 | 36% |
| | b)10,000-15,000 | 9 | 36% | 10 | 40% |
| | c)15,000-20,000 | 5 | 20% | 6 | 24% |
| | d)Above20,000 | - | - | -- | - |
| 3 | **Residential area** | | | | |
| | a)Rural | 9 | 36% | 8 | 32% |
| | b)Urban | 16 | 64% | 17 | 68% |
| 4 | **Type of family** | | | | |
| | a) Joint family | 8 | 32% | 9 | 36% |
| | b)Nuclear family | 17 | 68% | 16 | 64% |
| | c) Divorced family | - | - | - | - |
| 5 | **Birth order** | | | | |
| | a) First | 12 | 48% | 13 | 52% |
| | b)Second | 8 | 32% | 7 | 28% |
| | c)Third | 5 | 20% | 5 | 20% |

| S. No | Demographic variables | Experimental group ($N_1$ = 25) | | Control group ($N_2$ = 25) | |
|---|---|---|---|---|---|
| | | frequency | Percentage (%) | Frequency | Percentage (%) |
| 6 | **Menstrual cycle** | | | | |
| | a)Regular | 16 | 64% | 17 | 68% |
| | b)Irregular | 9 | 36% | 8 | 32% |
| 7 | **Diet pattern** | | | | |
| | a)Vegetarian | 10 | 40% | 11 | 44% |
| | b)Non-vegetarian | 15 | 60% | 14 | 56% |
| | c)Ova-vegetarian | - | -% | - | - |
| 8 | **Family history of obesity** | | | | |
| | a) Yes | 17 | 68% | 16 | 64% |
| | b)No | 8 | 32% | 9 | 36% |

**Table 4.1** reveals that the demographic variables of obese adolescent girls in experimental group and control group i.e. age, income of the family, Residential area, Type of family, Birth, Menstrual cycle, diet pattern and family history of obesity.

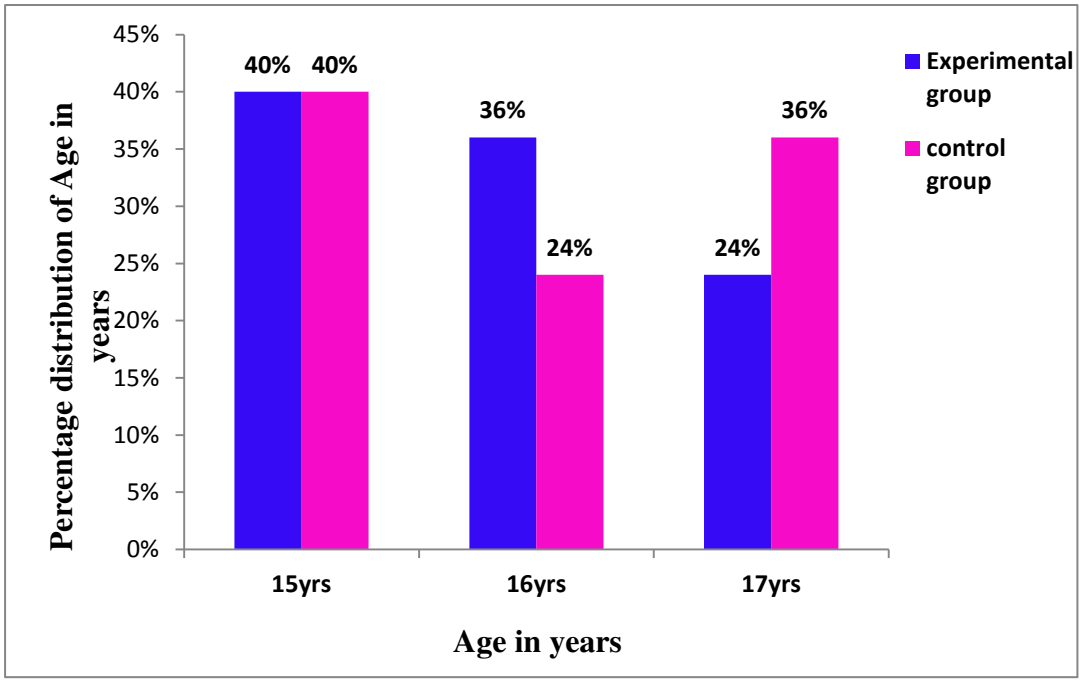


**Fig4.1 Bar diagram showing the percentage distribution of adolescent girls according to their age group**

Distribution of sample according to their age group in experimental group and control group shows that, highest (40% and 40%) percentage of adolescence were in the age group of 15 years. However in experimental and control group similar (36% and 24%) percentage of sample were in the age group of16 years. Similarly 24% of sample were in the age group of 17 years.

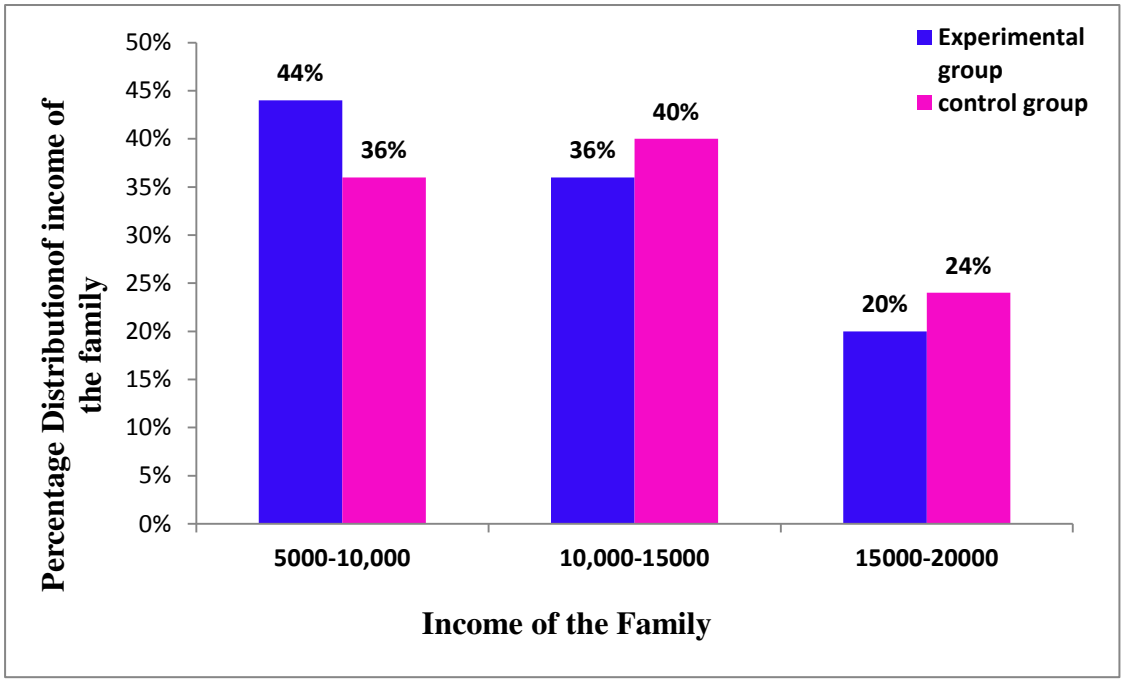


**Fig4.2 Bar diagram showing the percentage distribution of adolescence according to their Income of the family.**

Distribution of sample according to the income of the family in experimental group shows that, highest (44%) percentage of adolescence were in 5,000-10,000p/m and control group shows that highest (40%) percentage of adolescence were in 10-000-15,000p/m and control group shows that lowest(24% ) percentage of adolescence were15,000-20,000.

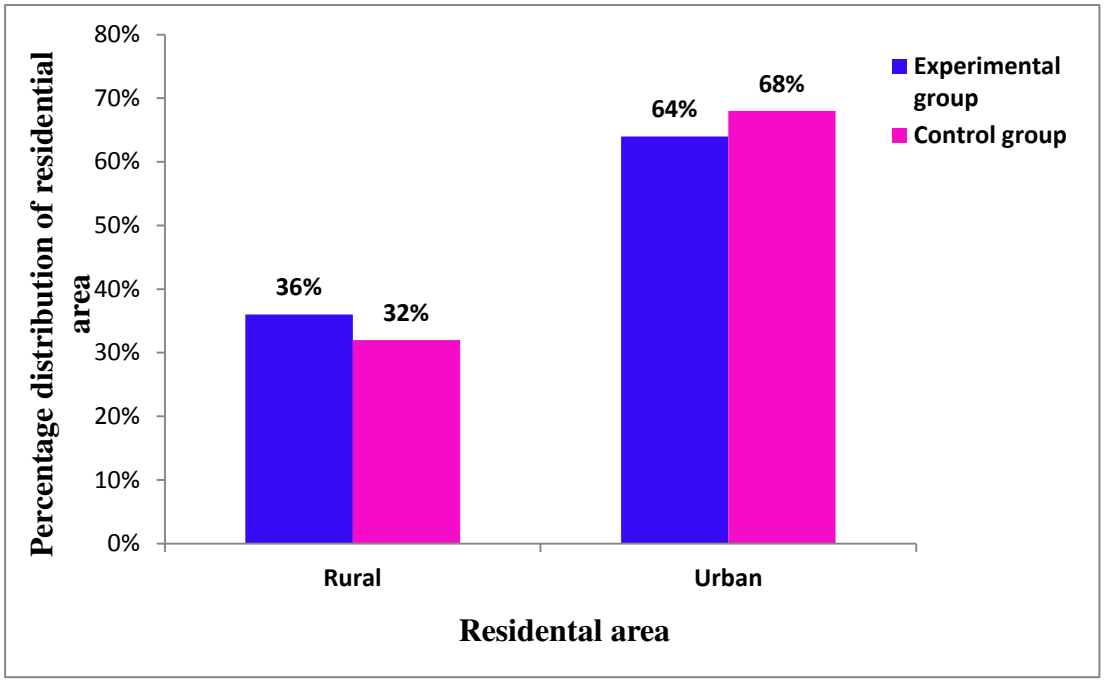


**Fig4.3 Bar diagram showing the percentage distribution of adolescence according to their Residential area.**

Distribution of sample according to the Residential area in experimental group and control group shows that highest (64% and68%) percentage of adolescence was in Urban area.

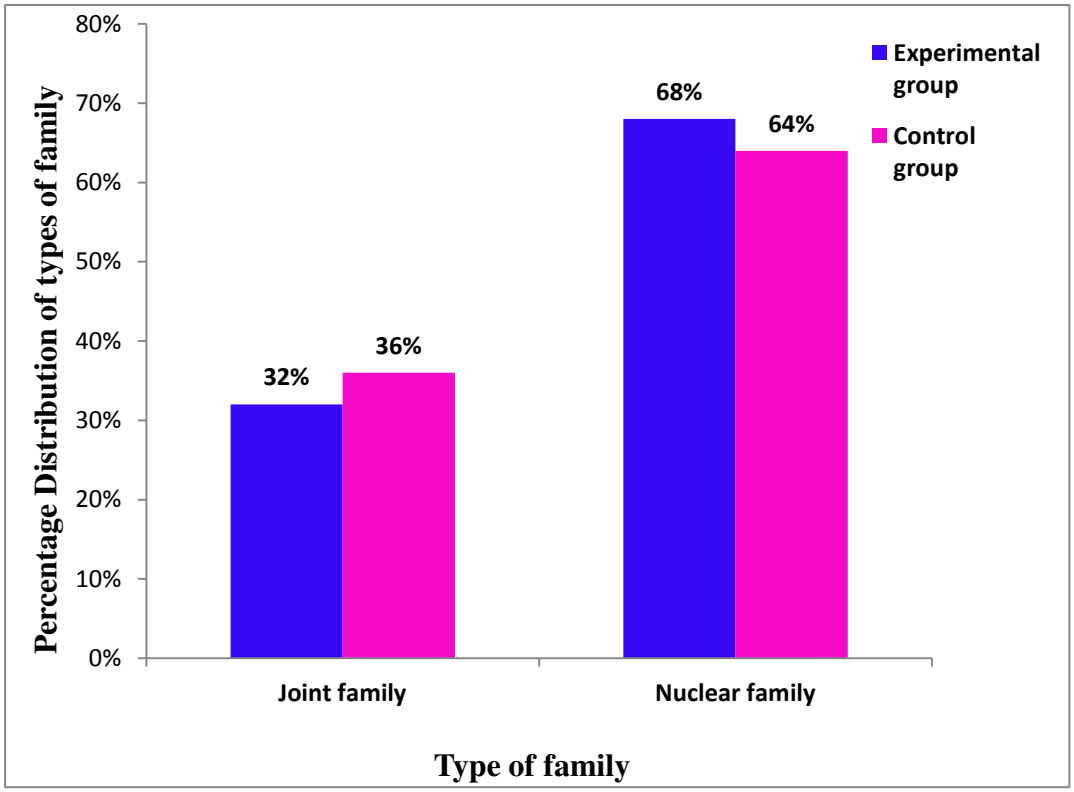


**Fig 4.4 Bar diagram showing the percentage distribution of adolescence according to their type of family.**

Distribution of samples according to their type of family in control group shows that highest (64%) percentage of sample were Nuclear family in the group and control group shows that lowest(36%) percentage of adolescence were in Joint family.

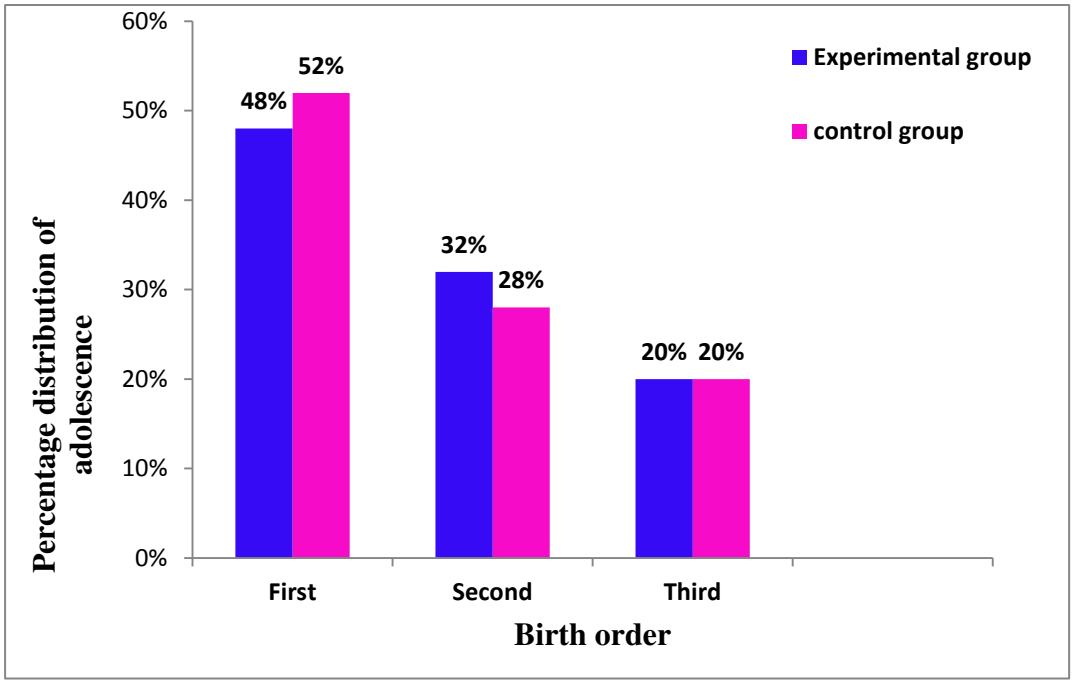


**Fig 4.5 Bar diagram showing the percentage distribution of adolescence according to their Birth order.**

Distribution of sample according to their Birth order in experimental group and control group shows that highest (48% and 52%) percentage were first and the lowest (20% and 20%) percentage of adolescence were third in both the groups.

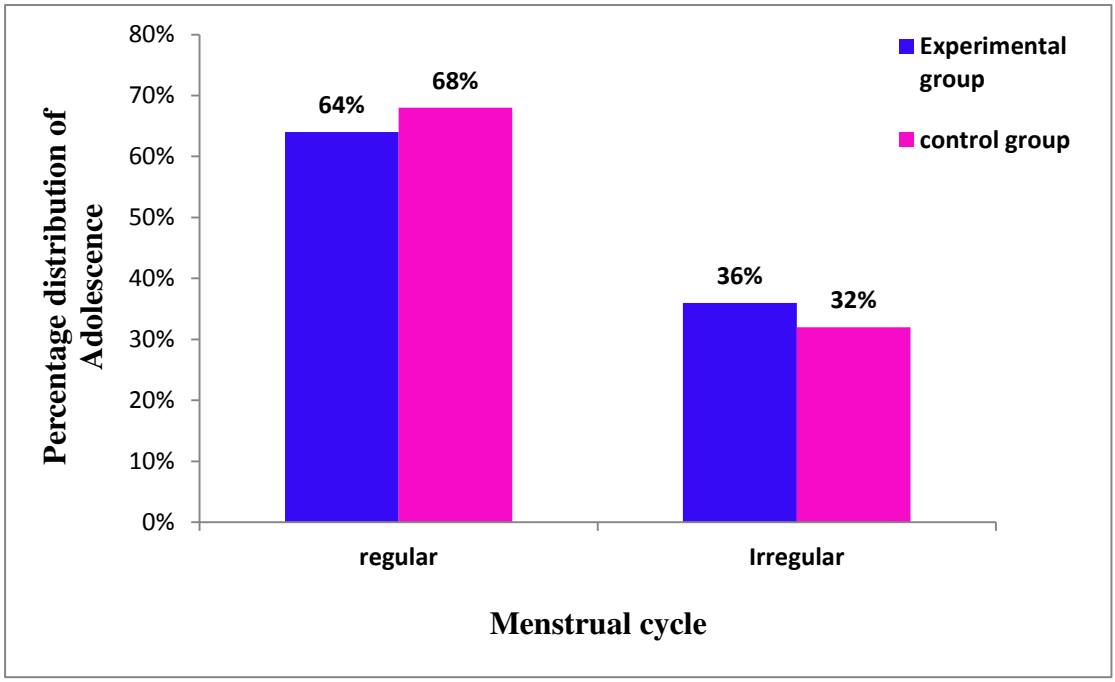


**Fig4.6 Bar diagram showing the percentage distribution of adolescence according to their menstrual cycle**

Distribution of samples according to their menstrual cycle in experimental group and control group shows that the highest (64% and 68%) percentage of adolescence were regular.

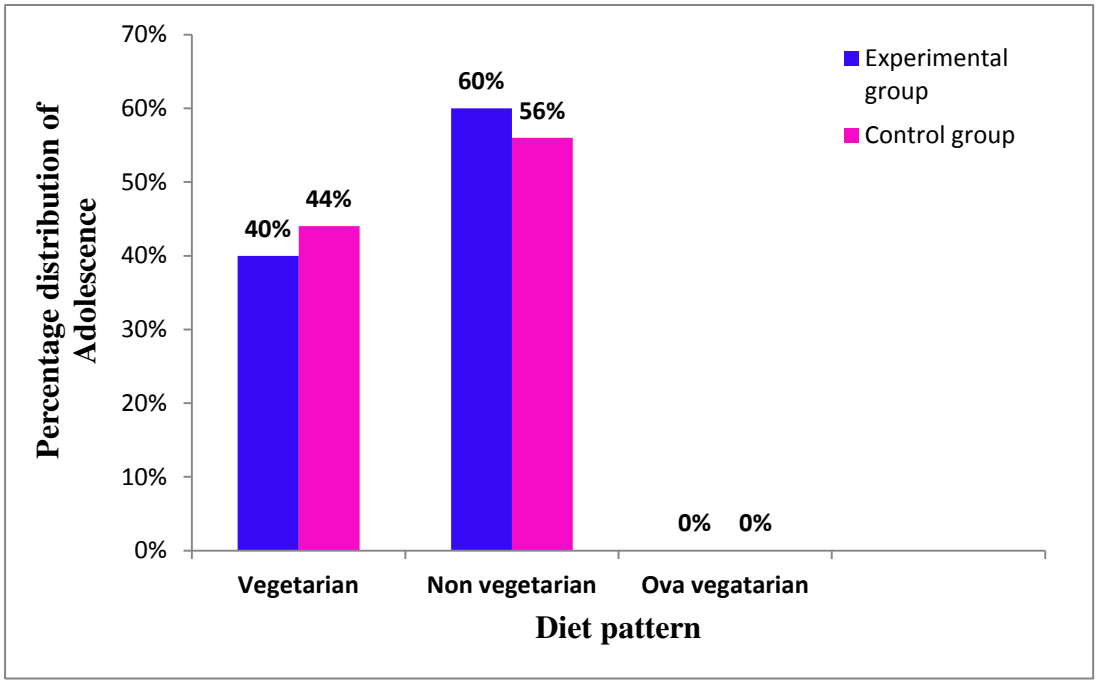


**Fig4.7 Bar diagram showing the percentage distribution of adolescence according to their Diet pattern.**

Distribution of sample according to their Diet pattern in experimental group and control group shows that highest (60% and 56%) percentage of adolescence were non-vegetarians.

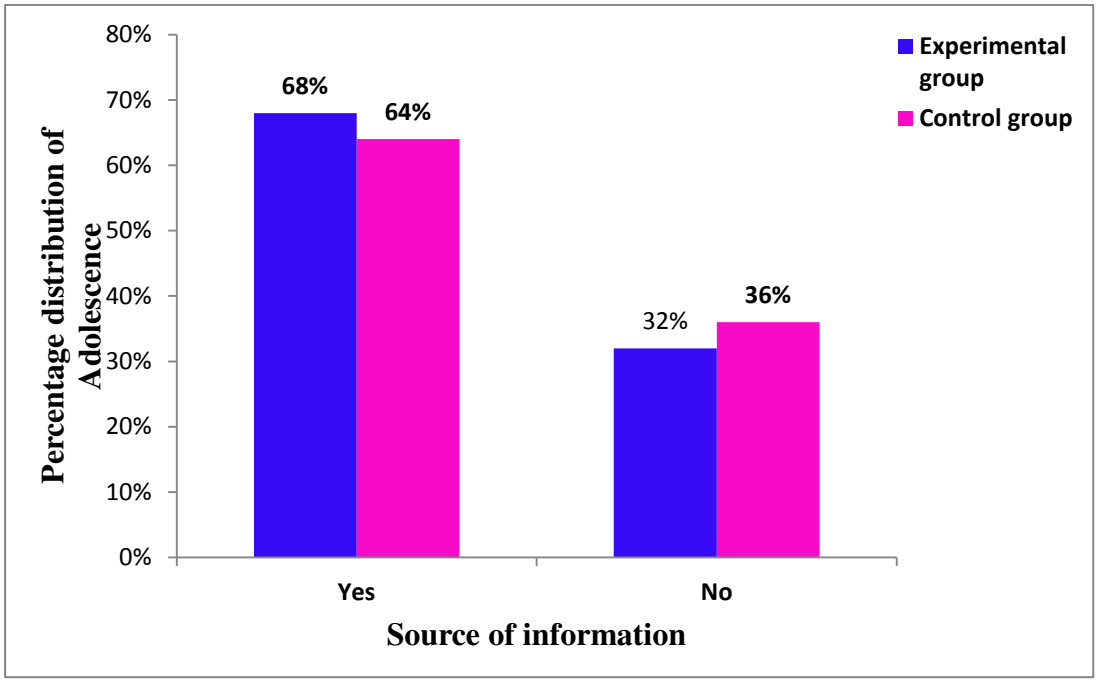


**Fig4.8 Bar diagram showing the percentage distribution of adolescence according to their Family history of obesity.**

Distribution of sample according to their family history of obesity in experimental group and control group shows that,(68% and64%) of adolescence has family history of obesity in experimental group and control group and (32% and 36%) has family history of obesity in experimental group and control group.

**SECTION B: ASSESS THE LEVEL OF OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS BEFORE AND AFTER FOOD DIARY IN EXPERIMENTAL AND CONTROL GROUP**

**Table 4.2 - Frequency and percentage distribution of pre and post test scores of physiological parameters among obese adolescent girls in Experimental group.**

| Physiological Parameters | Pretest | | Post test I | | Post test II | |
|---|---|---|---|---|---|---|
| | F | % | F | % | F | % |
| **Weight** | | | | | | |
| 50-53Kg | 10 | 40% | 11 | 44% | 12 | 48% |
| 53-56Kg | 9 | 36% | 9 | 36% | 8 | 32% |
| 56-60Kg | 6 | 24% | 5 | 20% | 5 | 20% |
| **BMI** | | | | | | |
| 30-32 | 10 | 40% | 13 | 52% | 14 | 56% |
| 32-33 | 12 | 48% | 7 | 28% | 6 | 24% |
| 33-35 | 3 | 12% | 5 | 20% | 5 | 20% |

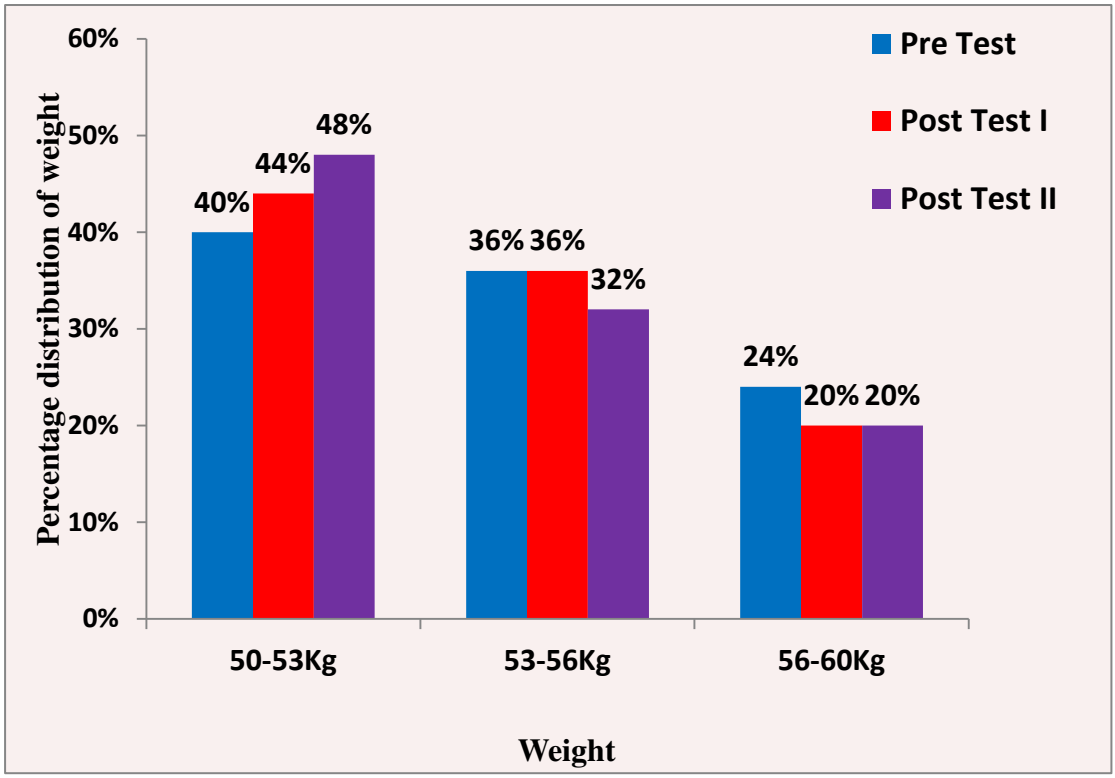


**Fig4.9 Bar diagram shows the percentage distribution of the experimental group pre and posttest scores of weight among obese adolescent girls.**

Frequency and percentage distribution of pre and post test scores on physiological parameters in experimental group depicts that in weight, pretest had most (40%) of them were between 50-53Kg and (36%) percentage of adolescence were between 53-56Kg and (24%) were between 56-60Kg.Whereas in posttest I had most (36%) of them were between 53-56Kg and (20%)percentage of adolescence were between 56-60Kg and (44%) were between 50-53kg.Whereas in posttest II had most(32%) of them were between 53-56Kg and (20%) percentage of adolescence were between 56-60Kg and (48%) were between 50-53Kg**. (Fig. 4.9).**

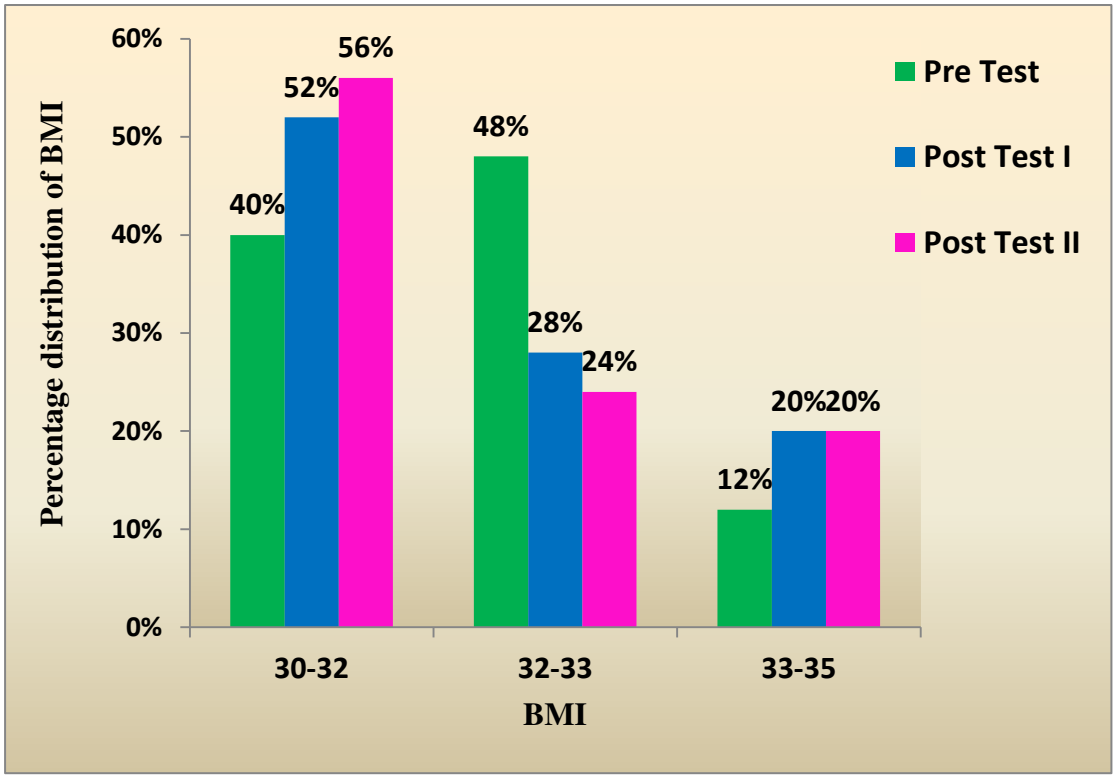


**Fig4.10 Bar diagram shows the percentage distribution of the experimental group pre and posttest scores of BMI among obese adolescent girls.**

In BMI, pretest had most (40%) of them were between 30-32 and (12%) percentage of adolescence were between 33-35.Whereas in posttest I had most (28%) of them were between 32-33and (58%) percentage of adolescence were between 30-32 and (20%) were between 33-35.Whereas in posttest II had most(56%) of them were between 30-32 and(24%) percentage of adolescence were between 32-33 and (20%) were between 33-35. (**Fig. 4.10).**

**Table 4.3 Frequency and percentage distribution of pre and post test scores of physiological parameters among obese adolescent girls in Control group.**

| Physiological Parameters | Pretest | | Post test I | | Post test II | |
|---|---|---|---|---|---|---|
| | F | % | F | % | F | % |
| **Weight** | | | | | | |
| 50-53Kg | 11 | 44% | 12 | 48% | 11 | 44% |
| 53-56Kg | 9 | 36% | 9 | 36% | 8 | 32% |
| 56-60Kg | 5 | 20% | 4 | 16% | 6 | 24% |
| **BMI** | | | | | | |
| 30-32 | 3 | 52% | 11 | 44% | 15 | 60% |
| 32-33 | 7 | 28% | 9 | 36% | 8 | 32% |
| 33-35 | 5 | 20% | 5 | 20% | 2 | 8% |

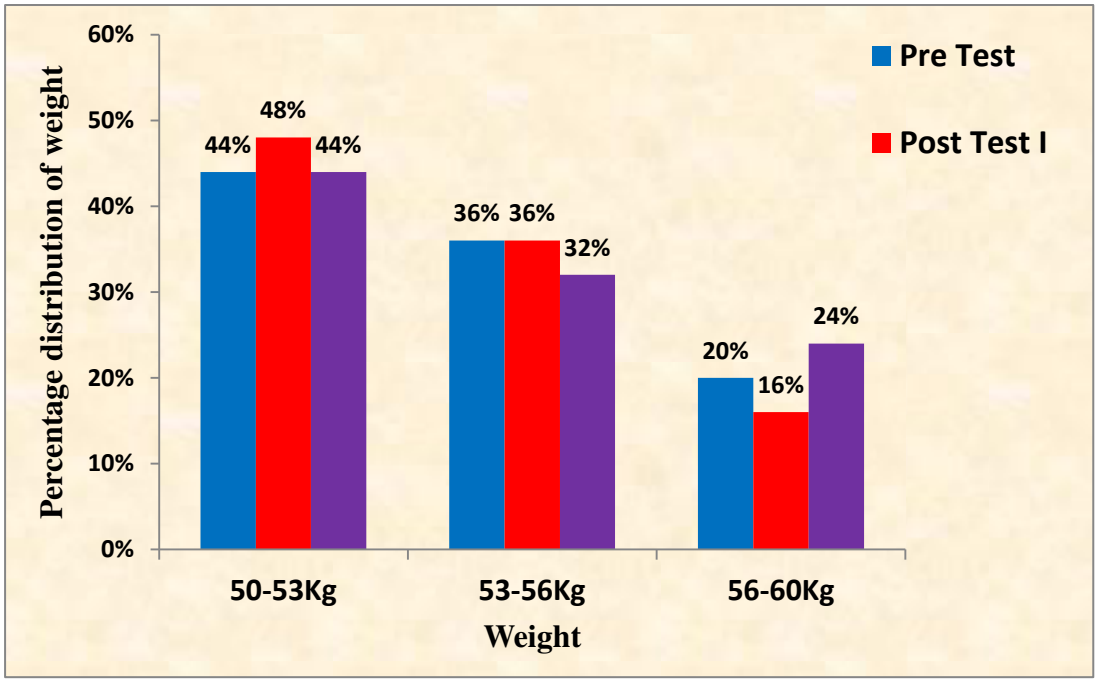


**Fig4.11 Bar diagram shows the percentage distribution of the control group pre and posttest scores of weight among obese adolescent girls.**

Frequency and percentage distribution of pre and post test scores on physiological parameters in control group depicts that ,in weight, pretest had most (20%) of them were between 56-60Kg and (36%) percentage of adolescence were between 53-56Kg and (44%) were between 50-53Kg.Whereas in posttest I had most (16%) of them were between 56-60Kg and (36%)percentage of adolescence were between 53-56Kg and (48%) were between 50-53kg.Whereas in posttest II had most(32%) of them were between 53-56Kg and (24%) percentage of adolescence were between 56-60Kg and (44%) were between 50-53Kg**. (Fig. 4.11).**

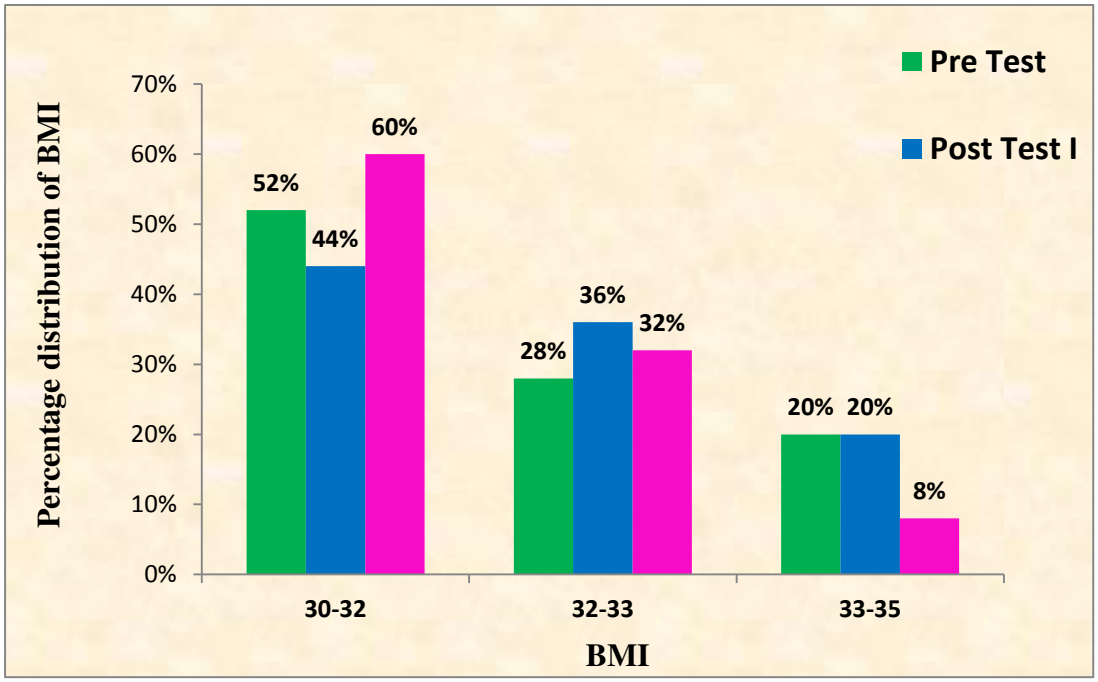


**Fig.4.12 Bar diagram shows the percentage distribution of the control group pre and posttest scores of BMI among obese adolescent girls.**

In BMI, pretest had most (20%) of them were between 33-35 and (28%) percentage of adolescence were between 32-33.Whereas in posttest I had most (20%) of them were between 33-35and (36%) percentage of adolescence were between 32-33 and (44%) were between 30-32.Whereas in posttest II had most(8%) of them were between 33-35 and(32%) percentage of adolescence were between 32-33. (**Fig 4.12)**

**Table 4.4 Frequency and percentage distribution of pre and post test scores of level of self esteem among obese adolescent girls in experimental group.**

| Level of self esteem | Pretest | | Post test I | | Post test II | |
|---|---|---|---|---|---|---|
| | **F** | **%** | **F** | **%** | **F** | **%** |
| **Low** | 15 | 60% | 16 | 64% | 13 | 52% |
| **Normal** | 10 | 40% | 9 | 36% | 12 | 48% |
| **High** | 0 | 0% | 0 | 0% | 0 | 0% |

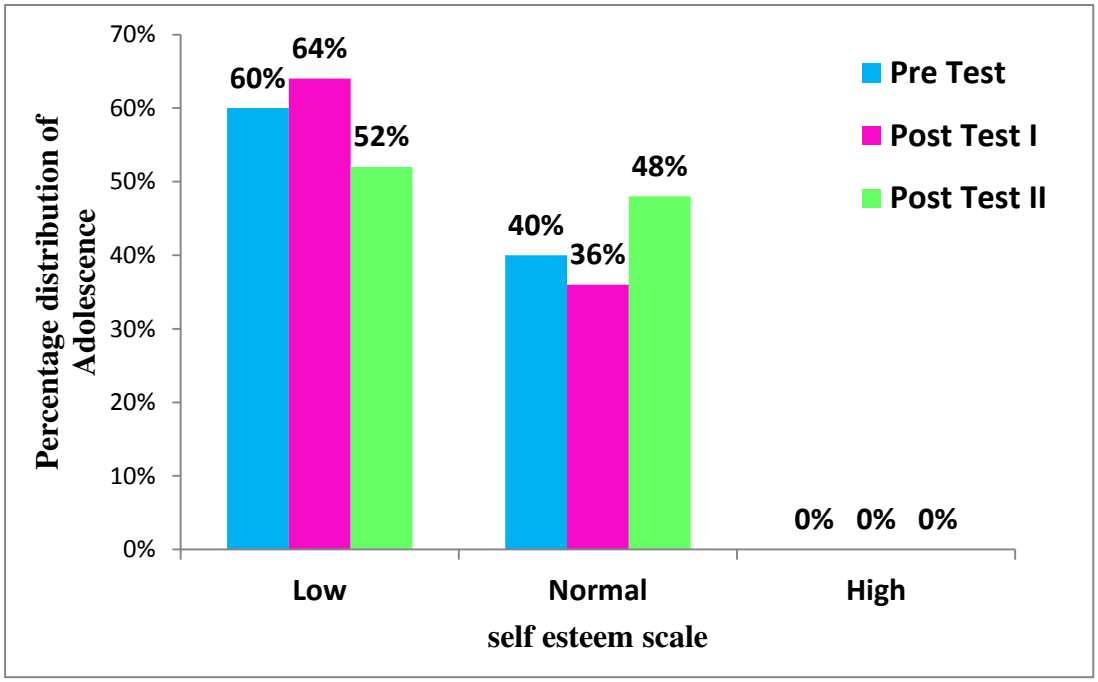


**Fig4.13 Bar diagram shows the percentage distribution of the experimental group pre and post test scores of Self esteem scale among obese adolescent girls.**

Frequency and percentage distribution of pre and post test scores on level of self esteem in experimental group depicts that, in pretest most (60%) of them had low and (40%) percentage of adolescence were normal and none (0%) were high respectively, Whereas in post test I most (36%) of them where normal and 64% of them were low and none (0%) were high. Whereas in post test II most (48%) of them where normal and 52% of them were low and none (0%) were high. (**Fig. 4.13).**

**Table 4.5 Frequency and percentage distribution of pre and post test scores of level of self esteem among obese adolescent girls in Control group.**

| Level of self esteem | Pretest | | Post test I | | Post test II | |
|---|---|---|---|---|---|---|
| | F | % | F | % | F | % |
| **Low** | 11 | 44% | 13 | 52% | 14 | 56% |
| **Normal** | 9 | 36% | 8 | 32% | 6 | 24% |
| **High** | 5 | 20% | 4 | 16% | 5 | 20% |

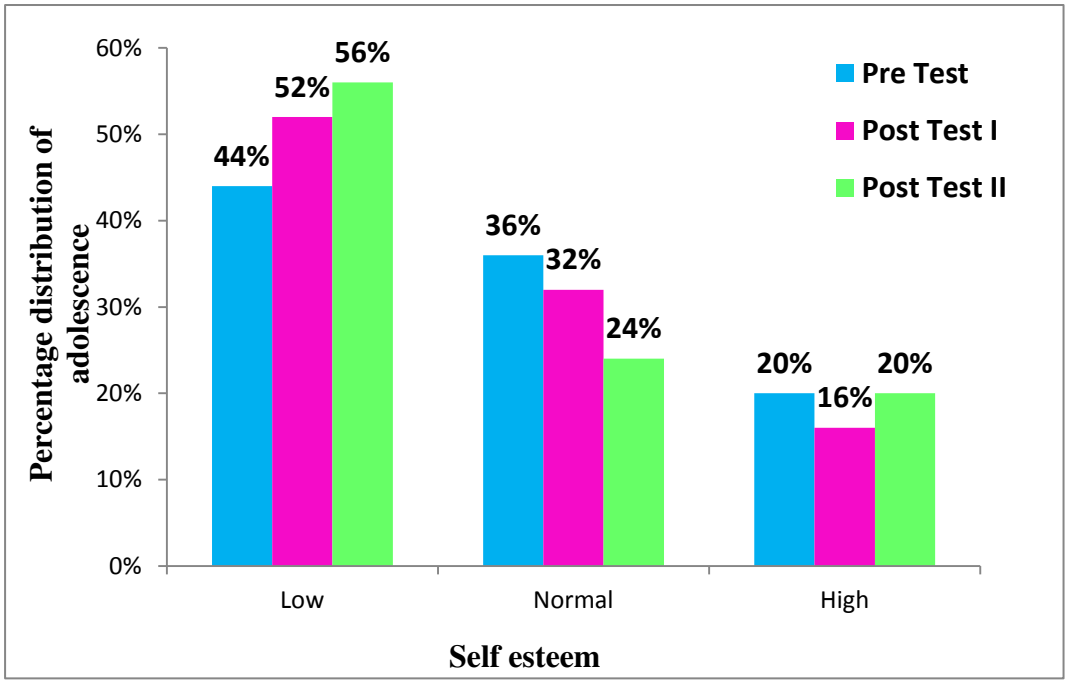


**Fig.4.14 Bar diagram shows the percentage distribution of the Control group pre and post test scores of level of Self-esteem scale among obese adolescent girls.**

Frequency and percentage distribution of pre and post test scores on level of self esteem in experimental group depicts that, in pretest most(44%)of them had low and (36%) percentage of adolescence were normal and (20%) were high respectively, Whereas in post test I most(32%) of them where normal and 52% of them were low and (16%) were high. Whereas in post test II most (24%) of them where normal and 56% of them were low and (20%) were high. (**Fig. 4.4).**

**SECTION C: TO ASSESS THE EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN EXPERIMENTAL AND CONTROL GROUP**

**Table 4.6 Mean and SD of selected obesity parameters among experimental group pre and post test scores.**

| Obesity parameters | Pretest | | Post test I | | | Post test II | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Difference Mean | Mean | SD | Difference Mean |
| **WEIGHT** | 53.3 | 2.7 | 52.9 | 2.4 | 0.4 | 52.7 | 3.0 | 0.6 |
| **BMI** | 31.6 | 1.5 | 30 | 1.8 | 1.6 | 31 | 1.2 | 0.6 |
| **SELF ESTEEM** | 14.5 | 1.3 | 14.5 | 0.8 | 0 | 14.7 | 1.1 | 0.2 |

Comparison of Mean and SD of experimental group pre and post test scores depicts that, in pretest the higher similar mean score was 53.3±2.7 in weight and31.6±1.5 in BMI and 14.5±1.3 in self esteem, whereas in post test I the mean score was 52.9±2.4 in weight and 30±1.8 in BMI and 14.5 ± 0.8 in self esteem, whereas in post test II 52.7± 3.0 in weight an 31 ± 1.2 in BMI and 14.7± 1.1 in self esteem, It reveals the difference of 0.4 (weight),1.6 (BMI) and0 (self esteem) in post test I and 0.6(weight),0.6 (BMI) and 0.2 (self esteem) in post test II. It seems that the food diary is effective in obese adolescent girls.

**Table 4.7** Mean and SD, of selected obesity parameters among control group pre and post test scores.

| Obesity parameters | Pretest | | Post test I | | | Post test II | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Difference Mean | Mean | SD | Difference Mean |
| **WEIGHT** | 52.9 | 2.4 | 54.0 | 2.2 | 1.1 | 52.2 | 2.6 | 0.7 |
| **BMI** | 31.1 | 1.2 | 31.3 | 1.2 | 0.2 | 30.8 | 1.4 | 0.3 |
| **SELF ESTEEM** | 16.8 | 4.7 | 16.0 | 4.4 | 0.8 | 16.6 | 4.8 | 2 |

Comparison of Mean and SD of experimental group pre and post test scores depicts that, in pretest the higher similar mean score was 52.9±2.4 in weight and31.1±1.2 in BMI and 16.8±4.7 in self esteem, whereas in post test I the mean score was 54.0±2.2 in weight and 31.3±1.2 in BMI and 16.0± 4.4 in self esteem, whereas in post test II 52.2± 2.6 in weight an 30.8 ± 1.4 in BMI and 16.6± 4.8 in self esteem, It reveals the difference of 1.1(weight),1.2 (BMI) and 4.4 (self esteem) in post test I and 0.7(weight),0.3 (BMI) and 2 (self esteem) in post test II. It seems that the food diary is effective in obese adolescent girls.

**Table 4.8 Paired "t" test value of pre and post test scores of experimental group and control group.**

| S. NO | Obese adolescent girls | Paired 't' value (weight) | Paired 't' value (BMI) | Paired 't' value (self esteem) | Table value | Level of significance |
|---|---|---|---|---|---|---|
| 1 | Experimental group | 5.81 | 6.3 | 5.1 | 2.06 | P<0.05 Significant |
| 2 | Control group | 3.8 | 3.1 | 3.8 | 2.06 | P<0.05 significant |

Df-24, Table value 2.06 (P>0.05 significance)

Paired 't' test was calculated to analyse the effectiveness between pre and post test scores of experimental group and control group on level of selected obesity parameters. The paired 't' test scores for overall physiological parameters, weight was 5.81 and BMI was 6.3 in experimental group, when compared to table value(2.06) it was high. It shows that food diary maintenance was more effective in obese adolescence**. (Table 4.8).**

Paired 't' test was calculated to analyse the effectiveness between pre and post test scores of experimental group and control group on level of physiological parameters. The paired 't' test scores for overall selected obesity parameters, weight was 3.8 and BMI was 3.1 in control group, when compared to table value(2.06) it was high. It shows that food diary maintenance was more effective in obese adolescence**. (Table 4.8).**

Paired 't' test was calculated to analyse the effectiveness between pre and post test scores of experimental group and control group on level of selected obesity parameters. The Paired 't' test scores for self esteem was 5.1 in experimental group,and3.8 in control group, when compared to table value(2.06) it was high**. (Table4.8).**

**Table 4.9 Comparison of mean among experimental and control group**

| Obese adolescent girls | | Pretest | Post test I | Post test II |
|---|---|---|---|---|
| Experimental group | Weight | 53.3 | 52.9 | 52.7 |
| | BMI | 31.6 | 30 | 31 |
| | Self esteem | 14.5 | 14.5 | 14.7 |
| Control group | Weight | 52.9 | 54.0 | 52.2 |
| | BMI | 31.1 | 31.3 | 30.8 |
| | Self esteem | 16.8 | 16.0 | 16.6 |

Comparison of Mean among experimental group and control group in pre and post test scores depicts that, in pretest the highest similar mean score was 53.3 in weight and 31.6 in BMI and 14.5 in self esteem, whereas in post test I the mean score was 52.9 in weight and 30 in BMI and 14.5 in self esteem, where in post test II 52.7in Weight and 31 in BMI and 14.7 in self esteem. Comparison of Mean among experimental group and control group in pre and post test scores depicts that, in pretest the highest similar mean score was 52.9in weight and 31.1 in BMI and 16.8 in self esteem whereas in post test I the mean score was 54.0in weight and 31.3in BMI, and 16.0in self esteem whereas in post test II 52.2 in Weight and 30.8 in BMI and 16.6 in self esteem.

**Table 4.10 Unpaired "t" test value of the post test scores of experimental group and control group.**

| S. No. | Obese adolescent girls | Unpaired 't' value | Table value | Level of significance |
|---|---|---|---|---|
| 1. | **Post Test – I** | | | |
| | - Weight | 2.2 | 2.00 | P<0.05 Significant |
| | - BMI | 1.92 | | P>0.05 Not Significant |
| | - Self esteem | 1.01 | | P>0.05 Not Significant |
| 2. | **Post Test – II** | | | |
| | - Weight | 0.89 | 2.00 | P>0.05 Not Significant |
| | - BMI | 0.79 | | P>0.05 Not Significant |
| | - Self esteem | 3.2 | | P<0.05 Significant |

**Df-48, Table value 2.00 significance at P<0.05**

Unpaired test was calculated to analyse the effectiveness between experimental group and control post test scores on obesity parameters among obese adolescence. Unpaired test value for post test I (weight) was 2.2,and post test II was 0.89, when compared to table value (2.00) It was low. It seems that there is significant effectiveness in food diary maintenance among obese adolescence.

Unpaired test value for post test I (BMI)was1.02, and post test II was 0.79, when compared to table value (2.00). It was low. It seems that there is significant effectiveness in food diary maintenance among obese adolescence.

Unpaired‘ test was calculated to analyse the effectiveness between experimental group and control group post test scores on obesity parameters among obese adolescence. Unpaired test value for post test I (self esteem) was 1.01, when compared to table value (2.00). It was low, and post test II was3.2 when compared to table value (2.00) .It was high. It seems that there is significant effectiveness in food diary maintenance among obese adolescence.

**SECTION D: FIND OUT THE ASSOCIATION BETWEEN THE POST TEST SCORES OF OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS AND THEIR SELECTED DEMOGRAPHIC VARIABLES IN EXPERIMENTAL AND CONTROL GROUP**

**Table 4:11 Association between the post test scores of physiological parameters among obese adolescent girls in experimental group with their demographic variables.**

| S.No | Demographic Variables | Df | $\chi 2$ Value | Table Value | Level of significance |
|---|---|---|---|---|---|
| 1 | Age | 2 | 3.18 | 5.99 | P>0.05 Not Significant |
| 2 | Income of the Family | 3 | 15.9 | 7.82 | P<0.05 Significant |
| 3 | Residential area | 1 | 3.80 | 3.84 | P>0.05 Not Significant |
| 4 | Type of family | 2 | 3.06 | 5.99 | P>0.05 Not Significant |
| 5 | Birth Order | 2 | 0.32 | 5.99 | P>0.05 Not Significant |
| 6 | Menstrual Cycle | 1 | 0.11 | 3.84 | P>0.05 Not Significant |
| 7 | Diet Pattern | 2 | 4.95 | 5.99 | P>0.05 Not Significant |
| 8 | Family History of Obesity | 1 | 4.96 | 3.84 | P<0.05 Significant |

Chi-square value was calculated to find out the association between the experimental group post test scores of physiological parameters with their demographic variables.

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, income of the family, Type of family, Birth order, Menstrual cycle, Diet Pattern,($p>0.05$)and there is significant association between post test scores of experimental group only when compared to family history, income of the family. Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Food diary maintenance was effective on obese adolescence irrespective of their demographic variables except family history, income of the family.

**Table 4:12 Association between the post test scores of self esteem among obese adolescent girls in experimental group with their demographic variables.**

| S. No | Demographic Variables | Df | $\chi 2$ Value | Table Value | Level of significance |
|---|---|---|---|---|---|
| 1 | Age | 2 | 3.18 | 5.99 | P>0.05 Not Significant |
| 2 | Income of the Family | 3 | 20.6 | 7.82 | P<0.05 Significant |
| 3 | Residential area | 1 | 5.0 | 3.84 | P<0.05 Significant |
| 4 | Type of family | 2 | 2.88 | 5.99 | P>0.05 Not Significant |
| 5 | Birth Order | 2 | 2.88 | 5.99 | P>0.05 Not Significant |
| 6 | Menstrual Cycle | 1 | 3.80 | 3.84 | P>0.05 Not Significant |
| 7 | Diet Pattern | 2 | 0.92 | 5.99 | P>0.05 Not Significant |
| 8 | Family History of Obesity | 1 | 4.44 | 3.84 | P<0.05 Significant |

Significant at0<0.05 Not Significant at0>0.05

Chi-square value was calculated to find out the association between the experimental group post test scores of selected self esteem with their demographic variables.

It reveals that there is no significant association between post test scores of experimental group when compared to age, Type of family, Birth order, Menstrual cycle, Diet Pattern, ($p>0.05$) and there is significant association between post test scores of experimental group only when compared to Income of the family. Hence the difference observed in the mean score value was only by chance and not true difference. It seems that residential area, family history of obesity, income of the family were effective on obese adolescence irrespective of their demographic variables.

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**Table 4.13: Association between control group post test scores with their demographic variables.**

| S.No | Demographic Variables | Df | $\chi 2$ Value | Table Value | Level of significance |
|---|---|---|---|---|---|
| 1 | Age | 2 | 4.44 | 5.99 | P>0.05 Not Significant |
| 2 | Income of the Family | 3 | 6.42 | 7.82 | P>0.05 Not Significant |
| 3 | Residential area | 1 | 3.80 | 3.84 | P>0.05 Not Significant |
| 4 | Type of family | 2 | 0.34 | 5.99 | P>0.05 Not Significant |
| 5 | Birth Order | 2 | 0.32 | 5.99 | P>0.05 Not Significant |
| 6 | Menstrual Cycle | 1 | 4.95 | 3.84 | P<0.05 Significant |
| 7 | Diet Pattern | 2 | 0.66 | 5.99 | P>0.05 Not Significant |
| 8 | Family History of Obesity | 1 | 11.4 | 3.84 | P<0.05 Significant |

Significant at0<0.05 Not Significant at0>0.05

Chi-square value was calculated to find out the association between the experimental group post test scores of selected self esteem with their demographic variables. It reveals that there is no significant association between post test scores of experimental group when compared to age, income of the family, Residential area, Type of family, Birth order, Diet Pattern, (p>0.05) and there is significant

association between post test scores of control group when compared to menstrual cycle and Family History of Obesity. Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Food diary maintenance was effective on obese adolescence irrespective of their demographic variables except menstrual cycle and family History of obesity.

**SUMMARY**

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of food diary on obesity parameters among obese adolescent girls. Findings revealed that experimental group the post test I score was 52.9±2.4 (weight) and 30 ± 1.8 (BMI), and the post test II score was 52.7± 3.0(weight) and 31± 1.2 (BMI).In control group the post test I score was 54.0± 2.2 (weight) and 31.3±1.2 (BMI), and the post test II score was 52.2± 2.6 (weight) and 30.8±1.4(BMI).It seems that food diary was more effective. The Paired 't' test showed there is moderately significant difference in food diary on obesity parameters and self-esteem among adolescents girls and chi-square test showed that no significant association was found in experimental group post test scores with their age, Residential area, Type of family, Birth Order, Menstrual Cycle, Diet Pattern, and there is significant association between post test scores of experimental group only when compared to Family History of Obesity, In control group chi-square test showed that no significant association was found in experimental group post test scores with their age, residential area, type of family, birth Order, diet Pattern and family of obesity, income of the family.

# CHAPTER – V

## DISCUSSION

This chapter deals with the discussion which was based on the findings obtained from the statistical analysis and its relation to the objectives of the study, the conceptual frame work and the related literature.

This aim of the study was "**the effectiveness of food diary on obesity parameters among obese adolescent girls in selected schools, Namakkal District**."

**The objectives of the study were,**

1. To assess the level of obesity parameters among obese adolescents girls before and after food diary in experimental and control group.
2. To assess the effectiveness of food diary on obesity parameters among obese adolescents girls in experimental and control group.
3. To find out the association between the post test scores of obesity parameters among obese adolescents girls and their selected demographic variables in experimental and control group.

**OBJECTIVE – 1 : To assess the obesity parameters among obese adolescent girls before and after food diary in experimental and control group.**

**a) Findings related to Frequency and percentage distribution of demographic variables among obese adolescent girls in experimental group and control group shows that,**

**In experimental group**

- 40% of the students were in the age group of 15 yrs.
- 44% of the student's family income were below5,000- 10,000P/m.
- Most (64%) of the adolescence girls were from Urban family.
- 68% of the adolescence girls were from Nuclear family.
- 48% of the adolescence girls were first child in the family.
- 64% of the adolescence girls were having regular menstrual cycle.
- Most (60%) of the adolescence girls were Non vegetarian.
- Most(68%) of the adolescence girls were having the family history of obesity.

**In control group**

- 40% of the students were in the age group of 15 yrs.
- 40% of the student's family income were 10,000-15,000P/m.

- Most (68%) of the adolescence girls were from urban family.
- 64% of the adolescence girls were from Nuclear family.
- 52% of the adolescence girls were second child in the family.
- 68% of the adolescence girls were having regular menstrual cycle.
- Most (56%) of the adolescence girls were Non vegetarian.
- Most(64%) of the adolescence girls were having the family history of obesity.

**OBJECTIVE – 2: Findings related to assess the level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group.**

**a) Findings related to Frequency and percentage distribution of pre and post test scores of self esteem scale among obese adolescent girls.**

**In experimental group.**

- 60% of the obese adolescence girls were having low self esteem in pretest.
- 64% of the obese adolescence girls were having normal self esteem in post test I.
- 52% of the obese adolescence girls were having normal self esteem in post test II.

**In control group**

- 44% of the obese adolescence girls were having low self esteem in pretest.
- 52% of the obese adolescence girls were having low self esteem in post test I.
- 56% of the obese adolescence girls were having low self esteem in post test II.

**Hypothesis I:** These is a significant level of obesity parameters among obese adolescents girls before and after food diary in experimental and control group. So this hypothesis is accepted.

**Mean and SD, of selected obesity parameters among experimental group pre and post test scores.**

**Experimental group**

- -In pretest, mean score were 53.3±2.7 in weight.
- --In pretest, mean score were 31.6±1.5 in BMI.
- --In pretest, mean score were 14.5±1.3 in self esteem.
- -In post test I, mean score were 52.9±2.4 in weight.
- -In Post test I, mean score were 30±1.8 in BMI.
- -In post test I, mean score were 14.5±0.8 in self esteem.
- -In post test II, mean score were 52.7±3.0 in weight.
- -In post test II, mean score were 31±1.2 in BMI.
- -In post test II, mean score were 14.7±1.1 in self esteem.

**Control group.**

- In pre test, mean score were 52.9±2.4 in weight.
- In pre test, mean score were 31.1±1.2 in BMI.
- In pre test, mean score were 16.8±4.7 in self esteem.
- In post test I, mean score were 54.0±2.2 in weight.
- In Post test I, mean score were 31.3±1.2 in BMI.
- In post test I, mean score were 16.0±4.4 in self esteem.
- In post test II, mean score were 52.2±2.6 in weight.
- In post test II, mean score were 30.8±1.4 in BMI.
- In post test II, mean score were 16.6±6.6 in self esteem.

**Paired "t" test value of pre and post test scores of experimental group and control group.**

- paired 't' test value for experimental group was 5.81 in weight,($P<0.05$)
- paired 't' test value for experimental group was 6.3 in BMI,($P<0.05$)
- paired 't' test value for experimental group was 5.1 in self esteem,($P<0.05$)
- paired 't' test value for control group was 3.8 in weight,($P<0.05$)
- paired 't' test value for control group was 3.1 in BMI,($P<0.05$)
- paired 't' test value for control group was 3.8 in self esteem,($P<0.05$).

**Unpaired "t" test value of the post test scores of experimental group and control group.**

- Unpaired 't' test value for Post test I was 2.2 in weight,($P<0.05$)
- Unpaired 't' test value for Post test I was 1.92 in BMI,($P<0.05$)
- Unpaired 't' test value for Post test I was 1.01 in self esteem,($P<0.05$)
- Unpaired 't' test value for Post test II was 0.89 in weight,($P<0.05$)
- Unpaired 't' test value for Post test II was 0.79 in BMI,($P<0.05$)
- Unpaired 't' test value for Post test II was 3.2 in self esteem,($P<0.05$)

**Comparison of pre test scores with post test I scores of obesity parameters among experimental group.**

- In pre test, mean score were 53.3 in weight
- In pre test, mean score were 31.6in BMI.
- In pre test, mean score were 14.5 in self esteem.
- In post test I, mean score were 52.9 in weight.
- In post test I, mean score were 30 in BMI.
- In post test I, mean score were 14.5 in self esteem.

**Comparison of pre test scores with post test II scores of obesity parameters among control group.**

- In pre test, mean score were 52.9 in weight.
- In pre test, mean score were 31.1 in BMI.
- In pre test, mean score were 16.8 in self esteem.
- In post test II, mean score were 52.2 in weight.
- In post test II, mean score were 30.8 in BMI.
- In post test II, mean score were 16.6 in self esteem.

**Hypothesis II:** There is a significant effect of food diary on obesity parameters among obese adolescents girls in experimental and control group. So this hypothesis is accepted.

**OBJECTIVE - 3 : Findings related to the association between the post test scores of obesity parameters among obese adolescence and their selected demographic variables in experimental and control group.**

**PHYSIOLOGICAL PARAMETERS**

**Experimental group**

- Chi-square value for age of the obese adolescence girls was 3.18 ($P>0.05$)
- Chi-square value for Income of the Family was 15.9 ($P<0.05$)

- Chi-square value for Residential area was 3.80 (P>0.05)
- Chi-square value for Type of family was 3.06 (P>0.05)
- Chi-square value for Birth Order was 0.32 (P>0.05)
- Chi-square value for Menstrual Cycle was 1.01 (P>0.05)
- Chi-square value for Diet Pattern was 4.95 (P>0.05)
- Chi-square value for Family History of Obesity was 4.96 (P<0.05)

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, Diet Pattern, menstrual cycle (P>0.05) and there is significant association between post test scores of experimental group only when compared to family history of obesity and income of the family.

**PSYCHOLOGICAL PARAMETERS**

**Experimental group**

- Chi-square value for age of the Adolescence girls was 3.18 (P>0.05)
- Chi-square value for Income of the Family was 20.6 (P<0.05)
- Chi-square value for Residential area was 5.0 (P<0.05)
- Chi-square value for Type of family was 2.88 (P>0.05)
- Chi-square value for Birth Order was 2.88 (P>0.05)

- Chi-square value for Menstrual Cycle was 3.80 (P>0.05)
- Chi-square value for Diet Pattern was 0.92(P>0.05)
- Chi-square value for Family History of Obesity was 4.44 (P<0.05)

It reveals that there is no significant association between post test scores of experimental group when compared to age, type of family birth order, menstrual cycle, diet pattern (P>0.05) and there is significant association between post test scores of experimental group only when compared to residential area, family history of obesity.

**Control group**

- Chi-square value for age of the Adolescence girls was 4.44 (P>0.05)
- Chi-square value for Income of the Family was 6.42 (P>0.05)
- Chi-square value for Residential area was 3.80 (P>0.05)
- Chi-square value for Type of family was 0.34 (P>0.05)
- Chi-square value for Birth Order was 0.32 (P>0.05)
- Chi-square value for Menstrual Cycle was 4.95 (P<0.05)
- Chi-square value for Diet Pattern was 0.66 (P>0.05)
- Chi-square value for Family History of Obesity was 11.4 (P<0.05)

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, diet pattern and there is significant association between post test scores of control group only when compared to menstrual cycle and family history of obesity.

**Hypothesis III:** There is a significant association between the post test scores of obesity parameters among obese adolescents girls and their selected demographic variables in experimental and control group. So this hypothesis is accepted.

# CHAPTER – VI

## SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, its findings, conclusion and the implications for nursing administration, nursing practice, nursing education and nursing research. This study has been started with a few limitations and ends with suggestions and recommendations for research in future.

### SUMMARY

Food diary among obese adolescent girls is widely discussed in many settings including journals and in numerable studies in the medical and nursing literature. This topic is great concern because of finding food diary maintenance is effective in obese adolescence girls.

There are some health personnel in the hospital and school having inadequate knowledge regarding food diary maintenance among obese girls, keep this in view, the investigator aimed to assess "**The effectiveness of food diary on obesity parameters among obese adolescent girls in selected schools, Namakkal District**."

**The objectives of the study were,**

1. To assess the obesity parameters among obese adolescent girls before and after food diary in experimental and control group.

2. To assess the effect of food diary on obesity parameters among obese adolescent girls in experimental and control group.

3. To find out the association between the post test scores of obesity parameters among obese adolescent girls and their selected demographic variables in experimental and control group.

**The hypothesis of the study were,**

$H_1$ : There is a significant level of obesity parameters among obese adolescent girls before and after food diary in experimental and control group.

$H_2$ : There is significant effect of food diary on obesity parameters among obese adolescent girls in control group than experimental group.

$H_3$ : There is a significant association between the post test scores of obesity parameters among obese adolescent girls and selected demographic variables in experimental and control group.

A review of related literature enabled the researcher to develop the conceptual frame work, tools and methodology which is the corner stone of the study. Literature review done for the present study was organized under the following headings.

The review of literature in this study is organized and divided into three under the following headings.

1. Studies related to obesity among adolescents.
2. Studies related to self esteem among obese adolescence.
3. Studies related to food diary maintenance

4. Studies related to food diary maintenance among obese adolescents.

The conceptual framework set up for the present study was the Kings theory of goal attainment. The research design used for the present study was Quasi experimental design where Pre and post test with control group design was selected. Setting chosen to conduct the study was Kumarapalayam for experimental group and Kumarapalayam for control group, The target population in the study was obese adolescence girls present during the period of data collection.

In this study sample size was 50 obese girls out of which 25 were experimental group and 25 were control group. The sampling technique used in this study was purposive Sampling Technique and Rosenberg Self Esteem Scale was used to assess the level of Self Esteem among obese adolescent girls.

The content validity was obtained from experts like Pediatric nursing personal, Pediatricians, Dietician, Statistician and the tool was modified according to the suggestions and recommendations of the experts. The reliability of the physiological parameters was tested by test retest method and tool was found to e reliable. (r1=0.86).Self esteem was tested by 'Spilt half method' is used to test the reliability of the tool and the tool was found to be reliable. (r2=0.85).

The main study was conducted in selected schools, Namakkal District. The samples were selected by using Purposive Sampling Technique among those who fulfill the sampling criteria. Data were gathered through Rosenberg Self Esteem Scale. The data gathered were analyzed by descriptive and inferential statistical method and interpretation was made based on the objectives of the study.

## FINDINGS

The major findings of the study were presented under the following headings.

**I. Findings related to frequency and distribution of demographic variables among adolescence in experimental group and control group shows that,**

**In experimental group**

Most (64%) of the adolescence girls were from urban family. 60%of the adolescence girls were non vegetarian. Most 68% of the adolescence girls were having the family history of obesity.

**In control group**

Most (68%) of the adolescence girls were from urban family. 56% of the adolescence girls were Non vegetarian. Most 64% of the adolescence girls were having the family history of obesity.

**II. Findings related to frequency and percentage distribution of pre and post test scores of self esteem scale among obese adolescence in experimental group.**

52% of the adolescence girls were having low self esteem in post test II.

**Findings related to frequency and percentage distribution of pre and post test scores of self esteem scales among obese adolescence in control group.**

56% of the adolescence girls were having low self esteem in post test II.

**III. Findings related to assess the level of obesity parameters and self esteem among adolescent girls before and after food diary in experimental and control group.**

**Mean and SD, of selected Obesity parameters among experimental group pre and post test scores.**

**Experimental group**

- In post test II, mean score were 52.7± 3.0 in weight, 31± 1.2 in BMI and 14.7±1.1 in self esteem.

**Control group**

- In post test II, mean score were52.2±2.6 in weight, 30.8±1.4 in BMI and 16.6±2 in self esteem.

- Paired "t" test value of pre and post test scores of experimental group and control group.

- Paired "t" test value for experimental group was 5.81in weight, ($p<0.05$),6.3 in BMI, ($p<0.05$) 5.1 in self esteem, ($p<0.05$).

- Paired "t" test value for control group was3.8 in weight, ($p<0.05$), 3.1in BMI, ($p<0.05$) and 3.8 in self esteem, ( $p< 0.05$).

- Unpaired "t" test value of the post test scores of experimental group and control group.

- Unpaired "t" test value for post test II was 0.84 in weight, ($p < 0.05$),0.79 in BMI (p,0.05), 3.2in self esteem, ( $p < 0.05$).

**iv. Findings related to the association between the post test scores of obesity parameters and self esteem among adolescence and their selected demographic variables in experimental and control group.**

**PHYSIOLOGICAL PARAMETERS**

**Experimental group**

- Chi-square value for age of the obese adolescence girls was 3.18 ($P>0.05$)
- Chi-square value for Income of the Family was 15.9 ($P<0.05$)
- Chi-square value for Residential area was 3.80 ($P>0.05$)
- Chi-square value for Type of family was 3.06 ($P>0.05$)
- Chi-square value for Birth Order was 0.32 ($P>0.05$)
- Chi-square value for Menstrual Cycle was 1.01 ($P>0.05$)
- Chi-square value for Diet Pattern was 4.95 ($P>0.05$)
- Chi-square value for Family History of Obesity was 4.96 ($P<0.05$)

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, Diet Pattern, menstrual cycle ($P>0.05$) and there is significant association

between post test scores of experimental group only when compared to family history of obesity and income of the family.

**PSYCHOLOGICAL PARAMETERS**

**Experimental group**

- Chi-square value for age of the Adolescence girls was 3.18 (P>0.05)
- Chi-square value for Income of the Family was 20.6 (P<0.05)
- Chi-square value for Residential area was 5.0 (P<0.05)
- Chi-square value for Type of family was 2.88 (P>0.05)
- Chi-square value for Birth Order was 2.88 (P>0.05)
- Chi-square value for Menstrual Cycle was 3.80 (P>0.05)
- Chi-square value for Diet Pattern was 0.92 (P>0.05)
- Chi-square value for Family History of Obesity was 4.44 (P<0.05)

It reveals that there is no significant association between post test scores of experimental group when compared to age, type of family birth order, menstrual cycle, diet pattern (P>0.05) and there is significant association between post test scores of experimental group only when compared to residential area, family history of obesity, income of the family.

**Control group**

- Chi-square value for age of the Adolescence girls was 4.44 (P>0.05)
- Chi-square value for Income of the Family was 6.42 (P>0.05)
- Chi-square value for Residential area was 3.80 (P>0.05)
- Chi-square value for Type of family was 0.34 (P>0.05)
- Chi-square value for Birth Order was 0.32 (P>0.05)
- Chi-square value for Menstrual Cycle was 4.95 (P<0.05)
- Chi-square value for Diet Pattern was 0.66 (P>0.05)
- Chi-square value for Family History of Obesity was 11.4 (P<0.05)

It reveals that there is no significant association between post test scores of experimental group when compared to age, residential area, type of family, birth order, diet pattern and there is significant association between post test scores of control group only when compared to menstrual cycle and family history of obesity.

**CONCLUSION**

From the findings of the study can be conclude that,

- Most of the adolescence girls were in the age group of 15 years, family income were Rs.5,000 – Rs.10,000 per month in urban family, nuclear family, first child in the family, regular menstrual cycle, non vegetarian, family history of obesity.

- Food diary was effective in obesity parameters.

- It reveals that there is no significant association between post test scores of experimental group when compared to age, income of the family, Residential area, income of the family, Type of family, Birth order, Menstrual cycle, Diet Pattern,($p>0.05$)and there is significant association between post test scores of experimental group only when compared to family history, income of the family,. Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Food diary maintenance was effective on obese adolescence irrespective of their demographic variables except family history, income of the family.

- It reveals that there is no significant association between post test scores of experimental group when compared to age,, Residential area, Type of family, Birth order, income of the family, Diet Pattern, ($p>0.05$) and there is significant association between post test scores of control group when compared to menstrual cycle and Family History of Obesity .Hence the difference observed in the mean score value was only by chance and not true difference. It seems that Food diary maintenance was effective on obese adolescence irrespective of their demographic variables except menstrual cycle and family History of obesity.

**IMPLICATIONS FOR NURSING**

The findings of the study have implication in Nursing practice, Nursing administration and Nursing research.

**Nursing Practice**

- ✓ The nursing personnel can reinforce the health benefits of maintaining food diary to obese adolescence and other health care team members.

- ✓ The food diary maintenance can be used to reduce the weight and decrease the effect of obesity.

**Nursing Education**

- ✓ Nursing educator should educate the nursing professional about the effectiveness of maintaining food diary to obese adolescence.

- ✓ The researcher educates the obese adolescence to maintain the food diary in regular practice in order to control their diet.

**Nursing Administration**

- ✓ Nurse administrator can foster the maintenance of food diary among obese adolescence.

- ✓ Nurse administrator can organize conference, seminars, and workshop for students studying in schools to encourage a positive attitude on maintaining food diary among obese adolescence.

- ✓ Nurse administrator can encourage the researchers to conduct the research to identify the effectiveness maintaining food diary.

**Nursing Research**

- ✓ The study may be issued for further reference.
- ✓ Findings can be generalized for all obese adolescence through publications.

## RECOMMENDATIONS

Based on the findings of the study the following recommendation have been made for the study.

- ✓ A large scale study can be carried out to generalize the findings.
- ✓ A comparative study can be undertaken to compare the effectiveness of food diary maintenance with other weight reduction measures.
- ✓ A long durational study can be carried out to generalize the findings.
- ✓ A comparative study can be undertaken to compare the obesity parameters between the genders.

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15. www.hindustantimes.com

# ANNEXURE –I

## LETTER SEEKING PERMISSION TO CONDUCT STUDY

**From**

**301617551**
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O,Namakkal Dt.

**Forwarded through**

The Principal
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O), Namakkal Dt.

Respected Sir,

**Sub** : Permission to conduct study - Regarding

I am M.Sc. (Child Health Nursing) II year student of Sresakthimayeil Institute of Nursing and Research. As a partial fulfillment of Master of Science in Nursing, I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr. M.G.R. Medical University, Chennai by October 2018.

The statement of the problem chosen for my study is **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT".**

I request you to permit me to conduct the proposed study under your jurisdiction and provide the necessary facilities for the study. Kindly do the needful.

Thanking you in anticipation,

Yours Faithfully,

**(301617551)**

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183

SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH * KOMARAPALAYAM-638183 *

# ANNEXURE – II

## LETTER GRANTING PERMISSION TO CONDUCT STUDY

From,

**301617551**
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O,Namakkal Dt.

Forwarded through,
The Principal
To,

The Head Master
JKK Rangammal Hr. Sec. SCHOOLS,
Kumarapalayam.

Respected Sir,

Sub: M.Sc., (Nursing) student – research – data collection – regarding.

**301617551** is a II year M.Sc. Nursing student of Sresakthimyeil Institute of Nursing and Research. As a partial fulfillment of Master of Science in Nursing, I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr.M.G.R. Medical University, Chennai by October 2018.

The statement of the problem chosen for my study is **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"**.

I request you to permit me to collect the data from your school. I assure you that I will not in any way affect the routine work of your school nor would it harm the study subjects.

Kindly do the needful.
Thanking you,

Yours sincerely,
**301617551**
Sresakthimayeil Institute of
Nursing and Research.
Kumarapalayam, Namakkal (Dt).

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183.

தலைமை ஆசிரியை
ஜே.கே.கே.ரங்கம்மாள்
மகளிர் மேல்நிலைப் பள்ளி
குமாரபாளையம் - 638 183
நாமக்கல் மாவட்டம்

## LETTER GRANTING PERMISSION TO CONDUCT STUDY

From,

**301617551**
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O,Namakkal Dt.

Forwarded through,
The Principal
To,

The Head Master
Star Lions Mat. Hr. Sec. School,
Kumarapalayam – 638183.
Namakkal Dt.


Respected Sir,

Sub: M.Sc., (Nursing) student – research – data collection – regarding.

**301617551** is a II year M.Sc. Nursing student of Sresakthimyeil Institute of Nursing and Research. As a partial fulfillment of Master of Science in Nursing, I am going to conduct a research and submit the dissertation work to the Tamil Nadu Dr.M.G.R. Medical University, Chennai by October 2018.

The statement of the problem chosen for my study is **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"**.

I request you to permit me to collect the data from your school. I assure you that I will not in any way affect the routine work of your school nor would it harm the study subjects.

Kindly do the needful.
Thanking you,

Yours sincerely,
**301617551**
Sresakthimayeil Institute of
Nursing and Research.
Kumarapalayam, Namakkal (Dt).

# ANNEXURE – III

## LETTER REQUESTING FOR OPINION & SUGGESTIONS OF EXPERTS FOR CONTENT AND TOOL VALIDATION

**From**

**301617551**
II year M.Sc Nursing (Child Health Nursing),
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O,Namakkal Dt.

**Forwarded through**

The Principal
Sresakthimayeil Institute of Nursing & Research,
(JKK Nattraja Educational Institutions)
Kumarapalayam P.O), Namakkal Dt.

Respected Sir/Madam,

**Subject: Request for Expert Opinion and Suggestion to establish validation of Content and Research Tool**

I am a final year M.Sc Nursing student of Sresakthimayeil Institute of Nursing & Research, (JKK Nattraja Educational Institutions), Kumarapalayam, have selected the topic on **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"** as a partial fulfillment of M.Sc (N) programme, which has to be submitted to the Tamil Nadu Dr.M.G.R Medical University.

The prepared study tool is enclosed so I humbly request you to go through and give your valuable suggestions, modification and opinions. Kindly do the needful.

Thanking you in anticipation.

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183

SRESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH • KOMARAPALAYAM-638183

Yours faithfully

**301617551**

# APPENDIX – IV

## LIST OF EXPERTS

1. **Dr. Mrs. R. JAMUNA RANI, M.Sc. (Nursing), Ph.D,**
   Principal,
   Sresakthimayeil Institute of Nursing and Research,
   (J.K.K.N. Educational Institutions)
   Kumarapalayam.

2. **Prof. Mrs. P. BEULAH, M.Sc., (N),**
   Professor cum HOD, Child Health Nursing,
   Sresakthimayeil Institute of Nursing and Research,
   Kumarapalayam.

3. **Dr.G. MAHESHWARI, M.Sc., (N), Ph.D.,**
   Professor cum HOD – Child Health Nursing,
   Dhanvantri College of Nursing,
   Pallakkapalayam.

4. **Mrs. S. INDIRA, M.Sc., (N),**
   Vice Principal ,
   Anbu College of Nursing,
   Kumarapalayam.

5. **Prof. Mr. DHANAPAL M.Sc. M.Phil.,**
   Statistician,
   Sresakthimayeil Institute of Nursing and Research,
   Kumarapalayam.

# APPENDIX – V

## CONTENT AND TOOL VALIDATION CERTIFICATE

Name : **Dr.G.MAHESWARI, M.Sc., (N), Ph.D.,**

Designation : Professor cum HOD – Child Health Nursing,

Name of the college : Dhanvantri College of Nursing,
Pallakkapalayam.

I hereby certify that I have validated the tool of **301617551-** II year M.Sc Nursing student of Child Health Nursing Department who has taken Dissertation on **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"**


Signature of the expert

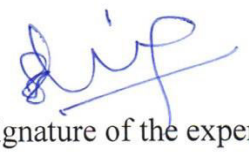
# CONTENT AND TOOL VALIDATION CERTIFICATE

Name : **Mrs.S.INDIRA, M.Sc., (N),**

Designation : Vice Principal,

Name of the college : Anbu College of Nursing,
Kumarapalayam.

I hereby certify that I have validated the tool of **301617551-** II year M.Sc Nursing student of Child Health Nursing Department who has taken Dissertation on **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"**



Signature of the expert

# APPENDIX –VI

## CERTIFICATE BY THE ENGLISH EDITOR

This is to certify that the dissertation entitled **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"** is a bonafied research work done by **301617551,** II year M.Sc Nursing, student of Sresakthimayeil Institute of Nursing & Research, (JKK Nattraja Educational Institutions), Kumarapalayam P.O, Namakkal Dt.

Signature of the Editor
A.D. SASIKALA, M.A., M.Phil.,

# APPENDIX –VII

## CERTIFICATE BY THE STATISTICIAN

This is to certify that the dissertation entitled **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"** has been statistically analyzed under the consultation and guidance of the statistician.

Signature of the Statistician

Professor of Statistics

# APPENDIX –VIII

## CERTIFICATE BY THE DIETITIAN

This is to certify that the dissertation entitled **"EFFECTIVENESS OF FOOD DIARY ON OBESITY PARAMETERS AMONG OBESE ADOLESCENT GIRLS IN SELECTED SCHOOLS, NAMAKKAL DISTRICT"** has been analyzed under the consultation and guidance by me.


Signature of Dietitian

# APPENDIX – IX

## DATA COLLECTION TOOL

### SECTION-A: DEMOGRAPHIC VARIABLES

**1. Age in years**

a. 15 ☐

b. 16 ☐

a. 17 ☐

**2. Income of the family (Rs) / month**

a. Rs.5,000 – Rs.10,000 ☐

b. Rs.10,000 – Rs.15,000 ☐

c. Rs.15,000 – Rs.20,000 ☐

d. Above Rs. 20,000 ☐

**3. Residential area**

a. Rural ☐

b. Urban ☐

**4. Type of family**

a. Joint family ☐

b. Nuclear family ☐

c. Divorced family ☐

**5. Birth order**

a. First ☐

b. Second ☐

c. Third ☐

**6.Menstrual cycle**

a. Regular ☐

b. Irregular ☐

**7. Diet pattern**

a. Vegetarian ☐

b. Non-vegetarian ☐

c. Ova-vegetarian ☐

**8. Family history of obesity**

a. Yes ☐

b. No ☐

## SECTION B: ROSENBERG SELF- ESTEEM SCALE

**Name:** **Date:**

| S. No | Statement | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| 1 | I feel that I am a Person of worth, at least on an equal plane with others. | | | | |
| 2 | I feel that I have a number of good qualities. | | | | |
| 3 | All in all, I am inclined to feel that I am a failure. | | | | |
| 4 | I am able to do things as well as most other people. | | | | |
| 5 | I feel I do not have much to be proud of. | | | | |
| 6 | I take a positive attitude toward myself. | | | | |
| 7 | On the whole, I am satisfied with myself. | | | | |
| 8 | I wish I could have more respect for myself. | | | | |
| 9 | I certainly feel useless at times. | | | | |
| 10 | At times I think I am no good at all. | | | | |

## SCORE ON THE ROSENBERG SELF- ESTEEM SCALE

Scores are calculated as follows:

**For items 1, 2, 4,6 and 7:**

- Strongly agree = 3
- Agree = 2
- Disagree = 1
- Strongly disagree = 0

**For items 3,5,8,9 and 10 ( which are reversed in valence):**

- Strongly agree = 0
- Agree = 1
- Disagree = 2
- Strongly disagree = 3

**The scale ranges from 0-30:**

| SI.NO | Description | Scores |
|---|---|---|
| 01 | Low self Esteem | < 15 |
| 02 | Normal | 15 - 25 |
| 03 | High Self Esteem | > 25 |

# APPENDIX – X

## BLUE PRINT DESCRIPTION ON FOOD DIARY

### INTRODUCTION

Obesity is characterized by an excess of body fat or adiposity. Obesity is most often defined by the body mass index (BMI) , a mathematical formula of weight – for – height index. BMI is measured by dividing the body weight in kilograms to height in meters squared(kg/m2).

In adolescents, the overweight state is generally caused by a lack of physically activity, unhealthy eating patterns resulting in excess energy intake , or a combination of the two resulting in energy excess.

Childhood obesity can adversely affect nearly every organ system and often has serious consequences, including hypertension, dyslipidaemia, insulin resistance, prediabetes, type 2 diabetes mellitus (T2DM), fatty liver disease and psychosocial complications.

Cardiovascular comorbidities include hypertension, dyslipidemia and risks for adult coronary heart disease.

### FOOD DIARY

A food journal is commonly used to identify eating patterns, trackcalories, and to identify changes that can be made.

Those who kept daily food records lost twice as much weight as those who kept no records.

A detailed record of the food and drink you consume over a given period of time. For example, one day, one week, or one month. A food journal may be hand written, typed, or kept online using a variety of websites and /or programs.

Details recorded may include the number of calories in your food, the time of day you ate, and your level of hunger when you ate.

| Age | Sedentary | Moderately active | Active |
|---|---|---|---|
| Early adolescence Ages12-13 | 1600 calories/day | 2000calories/day | 2200calories/day |
| Middle adolescence Ages14-18 | 1600-2000 calories/day | 2000-2200 calories/day | 2200-2400 calories/day |
| Late adolescence Ages19-24 | 2000calories/day | 2200calories/day | 2400calories/day |

Calorie values for common south Indian Foods:

| FOOD ITEMS | QUANTITY | CALORIES |
|---|---|---|
| White rice | 1 cup | 55 |
| Chappathi | 2 | 80 |
| Dal preparation | 1 cup/60 grams | 70 |
| Rasam | 1 cup | 30 |
| Sambar | (With 1 or 2 veg)1 cup | 60 |
| Veg curry | 1 cup | 100 |
| Curd | 1 cup | 112 |

| | | |
|---|---|---|
| Butter milk cup | 1 cup | 56 |
| Pickle | 1 spoon | 9 |
| Papad | 1 | 160 |
| Fish | 100 grams | 240 |
| Egg | 1 | 130 |
| Chicken | Grams | 300 |

**FOOD DIARY:**

| | **Sun day** | **Mon day** | **Tues day** | **Wednes day** | **Thurs day** | **Fri day** | **Satur day** |
|---|---|---|---|---|---|---|---|
| At 6 Am | | | | | | | |
| Break fast | | | | | | | |
| Brunch | | | | | | | |
| Lunch | | | | | | | |
| At 5 Pm | | | | | | | |
| Dinner | | | | | | | |
| Total | | | | | | | |

# APPENDIX – XI

## PHOTOGRAPHS


Buds : 39
Blossoms : 39
Absent
A.P Pavithra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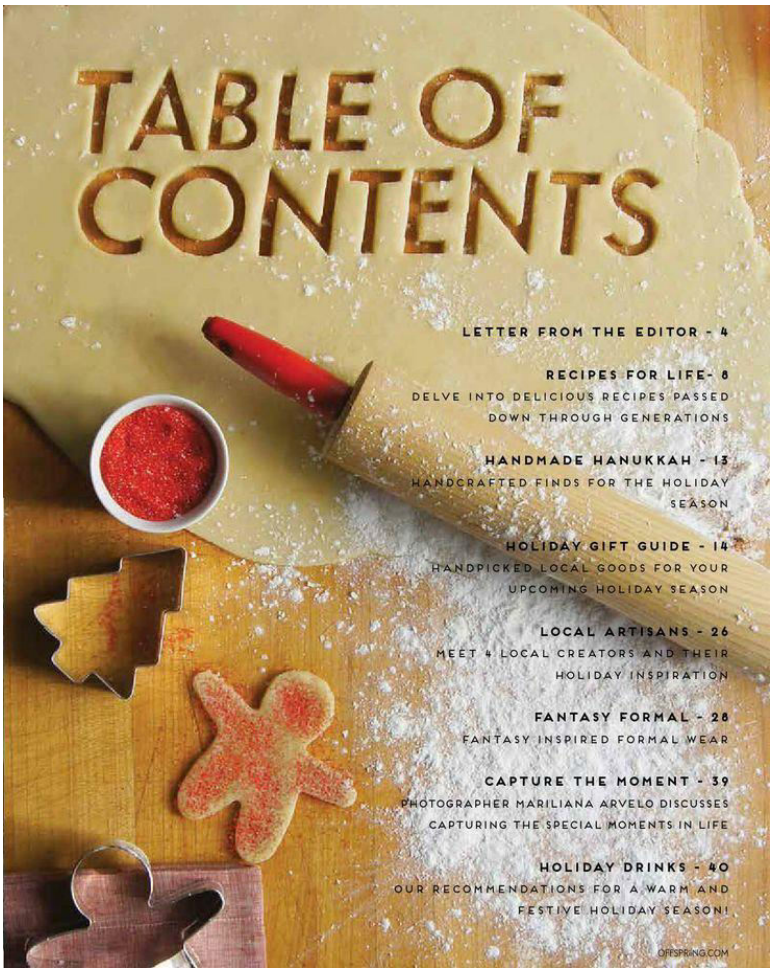
Blossoms : 39
Absent
A.P Pavithra

# *Certificate*

# Declaration

# Acknowledgement

# Abstract

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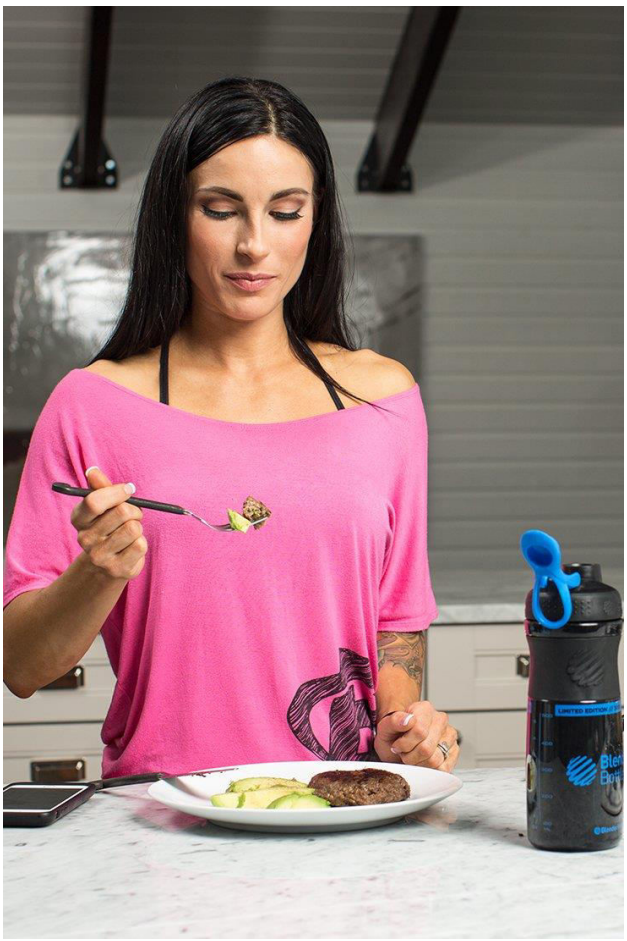

# Summary, Conclusion, Implications and Recommendations

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*Thanking you*